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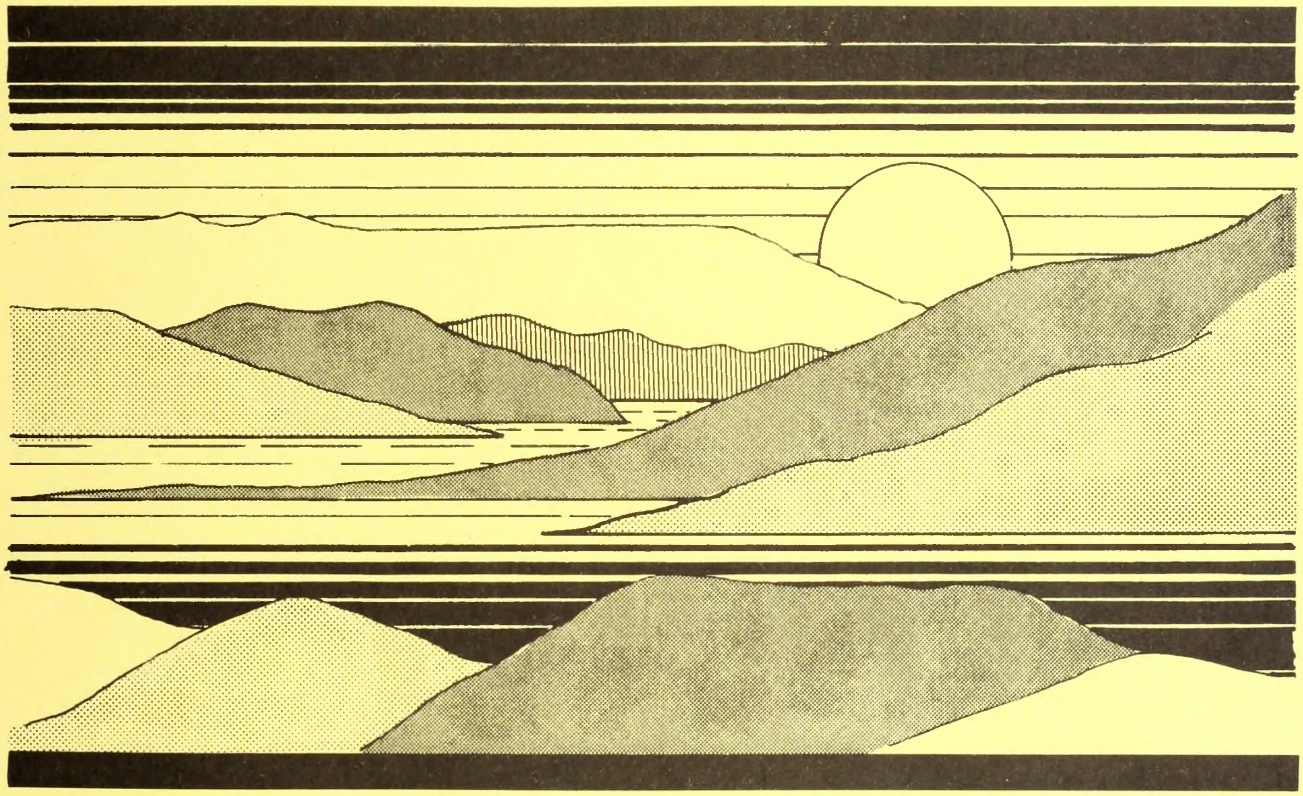
SOUTH SIERRA FOOTHILLS GRAZING MANAGEMENT

Draft Environmental Impact Statement



April 1983

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

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United States Department of the Interior

BUREAU OF LAND MANAGEMENT
800 Truxtun Avenue, Room 302
Bakersfield, California 93301
Phone: (805) 861-4191
Office hours: 7:30 a.m. to 4:00 p.m. weekdays

IN REPLY
REFER TO:

Dear Reviewer:

This draft environmental impact statement (EIS) on proposed range management in central California is for your review and comment. It has been prepared by a team of resource specialists from the Bureau of Land Management, Bakersfield District.

The statement was prepared pursuant to Section 102(2) (C) of the National Environmental Policy Act of 1969. It is based on information from the Bureau of Land Management and other sources, including Federal, State, and local agencies, and interested private organizations and citizens. This document differs from previous EIS's in the arrangement of the management alternatives considered. The "Proposed Action" alternative of this document represents the "No Action" alternative of previous EIS's. It represents the current use of the public lands by the livestock industry and the Bureau's current management.

The "Balanced Resource Use" alternative of this document is synonymous with the "Proposed Action" alternative of the previous EIS's. The "Balanced Resource Use" alternative represents the results of the land use planning process which was developed to provide for multiple use and sustained yield of the public lands.

The alternatives mentioned above, along with the Livestock Maximization Alternative, Resource Protection Alternative, and No Grazing Alternative will be considered in the development of the Bureau's final preferred alternative.

Please keep your copy of the draft, as only an abbreviated final will be printed. The final environmental impact statement will be prepared using the comments received through the public review process on contents of the draft. The final will contain a history of consultation and coordination and an addendum section recording changes made in the draft. This approach will result in substantial cost savings, since only the responses to comments and the corrections and modifications will be reprinted. Thus, this document must be used in conjunction with the abbreviated final, which will be distributed at a later date.

Sincerely yours

Robert D. Rheiner, Jr.

Robert D. Rheiner, Jr.
District Manager

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SOUTH SIERRA FOOTHILLS

DRAFT

ENVIRONMENTAL IMPACT STATEMENT

Prepared by

BUREAU OF LAND MANAGEMENT

DEPARTMENT OF THE INTERIOR

ACTING State Director, California State Office

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SOUTH SIERRA FOOTHILLS GRAZING
ENVIRONMENTAL IMPACT STATEMENT

Type of Action: (X) Draft ( ) Final

(X) Administrative ( ) Legislative

For Further Information Contact:

Caliente Resource Area Manager
Bureau of Land Management
520 Butte Street
Bakersfield, California 93305

Responsible Agency:

U.S. Department of the Interior
Bureau of Land Management
California State Office

Location of Action: Parts of the following counties in Central California:
Kern and Tulare

Scope: This draft environmental impact statement is a broad scope analysis of the proposed South Sierra Foothills Grazing Management Plan. Detailed environmental assessments will be prepared on site-specific actions and any specific activity plans (i.e., allotment management plans, rangeland improvements) as appropriate.

Abstract: The effects of livestock grazing on approximately 198, 113 acres of public land are analyzed. The proposed action and other alternatives are presented for consideration and are analyzed in terms of their projected economic, social, and environmental effects. Each alternative analyzes a different level of allocation of the vegetation resource among competing uses. Major impacts of the proposed action include the effects on wildlife, the watershed & water quality, the economic implications on affected livestock operators, and on recreation.

The document will be used to determine the proper management of livestock grazing on public lands, based on the principles of the multiple-use, sustained yield, and maintenance of environmental quality. The rangeland management program selected for the subject public land will be based upon the analysis presented in this document.

Date by which comments must be received: JUN 13 1983

Location to which comments must be sent:

Glenn A. Carpenter
Caliente Resource Area Manager
Bureau of Land Management
520 Butte Street
Bakersfield, CA 93305

SUMMARY

This EIS examines five alternatives:

1. Proposed Action (Present Management)
2. Livestock Maximization
3. Resource Protection
4. Balanced Resource Use
5. No Grazing

Dealing with four issues:

1. Impact of Grazing On Wildlife
2. Impact of Grazing On Water Quality and Watershed Protection
3. Economic Impacts of Grazing Management
4. Impact of Grazing On Recreation

Concerning Livestock Grazing:

1. On 198,113 acres
2. In the South Sierra Foothills Planning Area of the Caliente Resource Area, Bakersfield District.

General Land Use Goals are:

1. Maintain proper amounts of residual mulch on annual ranges and optimize yearly production on perennial ranges to:

   a. Insure maximum annual plant reproduction the following year.

   b. Insure that adequate feed is left so livestock are not unduly forced to browse brush plants that otherwise would be utilized as wildlife feed and cover.

   c. Protect the watershed from erosion and enhance water quality.

   d. Protect the aesthetic values of the grazed areas.

2. Increase forage production and availability for livestock and wildlife. Forage production will be increased by prescribed burns and rangeland management systems. Forage availability will be increased by additional water developments and fencing.

3. Further protect and enhance watershed and wildlife values by securing better distribution of livestock.

4. Protect cultural resource values and endangered plant and animal species and their respective habitats as required by law.

Table 1
Major Actions and Impacts of Alternatives

Major Actions	Proposed Action	Livestock Maximization	Resource Protection	Balanced Resource Use	No Grazing
Allotment Categories					
- Intensive (number)	9	9	9	9	-
- Maintenance (number)	26	26	26	26	-
- Custodial (number)	14	14	14	14	-
Range Improvements					
- Fences (miles)	1	14	1	14	2,000 (estimated)
- Springs (number)	25	40	1	26	0
- Guzzlers (number)	6	21	6	13	0
- Cattle Guards (number)	3	5	5	5	0
- Vegetation Manipulation (acres)	5610	9410	3140	6560	0
Impacted Resources					
- Wildlife	Deterioration of habitat expected on several allotments. Certain wildlife populations would decline.	Deterioration of habitat expected on several allotments. Certain wildlife populations would decline.	Wildlife populations will remain at present levels.	Wildlife populations would temporarily fall on Class I allotments and remain at present levels on Class M & C allotments.	Wildlife populations would increase as habitat grows back. In the long term, decadent chaparral communities would support lower diversity and abundance of wildlife.
-Water Resources	Decline in water quality and channel stability of streams and springs.	Decline in water quality and channel stability of streams and springs.	Minor improvements in water quality and channel stability of streams and springs.	Decline in water quality and channel stability of streams and springs.	Moderate improvement in water quality and channel stability of streams and springs.

Table 1 (Cont.)

Impacted Resources	Proposed Action	Livestock Maximization	Resource Protection	Balanced Resource Use	No Grazing
- Soils	Localized impacts from proposed rangeland improvements. Vegetation manipulation expected to increase upslope erosion and sedimentation for first 3 years after a prescribed burn.	Increased localized impacts due to the larger number of rangeland improvements proposed. Increased erosion and sedimentation from vegetation manipulation.	Fewer localized impacts due to the reduction in the number of rangeland improvements proposed. Minor increase in erosion & sedimentation from vegetation manipulation.	Minor localized impacts from the number of rangeland improvements proposed. Minor increase in erosion and sedimentation from vegetation manipulation.	Moderate improvements in soil conditions on all allotments with the elimination of livestock.
- Socio-Economics	Opportunity for some increase in livestock forage.	Up to 55 percent reduction in reliable livestock forage/Class I allotments. Mulch levels for the given year would determine the actual allocation.	Up to 80 percent reduction in reliable livestock forage/Class I allotments. Mulch levels for the given year would determine the actual allocation.	Up to 65 percent reduction in reliable livestock forage/Class I allotments. Mulch levels for the given year would determine the actual allocation.	Approximately one-half of the livestock operators would be substantially affected.
- Recreation	Some decrease in quality of hunting and fishing experiences. Minor impact on whitewater rafting, swimming, picnicking and hiking experiences.	Some decrease in quality of hunting and fishing experiences. Moderate impact on all water related recreation. Moderate to high impact to trail experiences and conditions along the Pacific Crest Trail.	Hunting and fishing experiences would remain at present levels. Minor impact on whitewater rafting, swimming, picnicking and hiking experiences.	Hunting experiences would decrease on Class I allotments, and remain at present levels on Class M & C allotments. Some fishing experiences would decrease. Minor impact on whitewater rafting, swimming, picnicking and hiking experiences.	Hunting and fishing experiences would improve. Impacts to whitewater rafting swimming and picnicking experiences would be eliminated. Hiking experiences along the Pacific Crest Trail would improve. Maintenance costs on the Pacific Crest Trail would be reduced.

Table 1 (Cont.)

Impacted Resources	Proposed Action	Livestock Maximization	Resource Protection	Balanced Resource Use	No Grazing
- Vegetation	5610 acres altered by vegetation manipulation, leading to an increase in forage production. Some over obligation of competitive species.	9410 acres altered by vegetation manipulation, leading to an increase in forage production. Over obligation of competitive species.	3140 acres altered by vegetation manipulation, leading to a slight increase in forage production.	6560 acres altered by vegetation manipulation, leading to an increase in forage production.	Large mulch build-up causing a serious fire hazard.
- R T & E Plants	Potential deterioration of sensitive species habitat.	Potential deterioration of sensitive species habitat.	Does not eliminate all potential impacts, therefore there may be continued habitat deterioration for some sensitive species.	Same as Alternative 3, Resource Protection	Sensitive species habitat would generally improve in many areas, if currently impacted by livestock, with an expected increase in populations.
- Cultural Resources	2 recorded cultural resource sites may be impacted. An unknown number of unrecorded sites may be impacted.	19 recorded cultural resources sites may be impacted. An unknown number of unrecorded sites may be impacted.	3 recorded cultural resources sites may be impacted. An unknown number of unrecorded sites may be impacted.	17 recorded cultural resource sites may be impacted. An unknown number of unrecorded sites may be impacted.	An unknown number of cultural resources sites may be impacted. Generally, the condition of presently impacted sites would improve.
- Wilderness	0.5 miles of fence. 5 spring developments. No vegetative manipulation. No change in Active Preference AUM's.	3 miles of fence. 7 spring developments. 2,800 acres of vegetative manipulation. A 133 AUM increase in Active Preference.	0.5 miles of fence. No spring developments. 700 acres of vegetative manipulation. No change in Active Preference AUM's.	3 miles of fence. 5 spring developments. 2,000 acres of vegetative manipulation. A 70 AUM increase in Active Preference.	90+ miles of fence. No spring developments. No vegetative manipulation.

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INTRODUCTION

CHAPTER - 1 INTRODUCTION

PURPOSE AND NEED FOR ACTION

PURPOSE: MANAGE GRAZING IN ACCORDANCE WITH

1) Taylor Grazing Act, 1934
2) National Environmental Policy Act, 1969
3) Federal Land Policy and Management Act, 1976
4) Endangered Species Act of 1973 as amended
5) Public Rangeland Improvement Act, 1978
6) National Historic Preservation Act of 1966 as amended

NEED: IMPROVE RESOURCE CONDITIONS ON PUBLIC LAND THROUGH IMPROVED GRAZING MANAGEMENT. CONSIDERED ARE THE FACTS THAT

1) 91,229 acres are rated unsuitable for livestock grazing.
2) 28,119 acres are rated potentially suitable for grazing.
3) 62,995 acres are rated suitable for grazing.
4) 15,770 acres were not surveyed.
5) Critical winter habitat for the Walker Pass and Mineral King Deer Herds is deteriorating in quality.
6) Watershed and Water Quality are being degraded or have a high potential for degradation.
7) There is conflict between recreation and livestock on certain allotments.

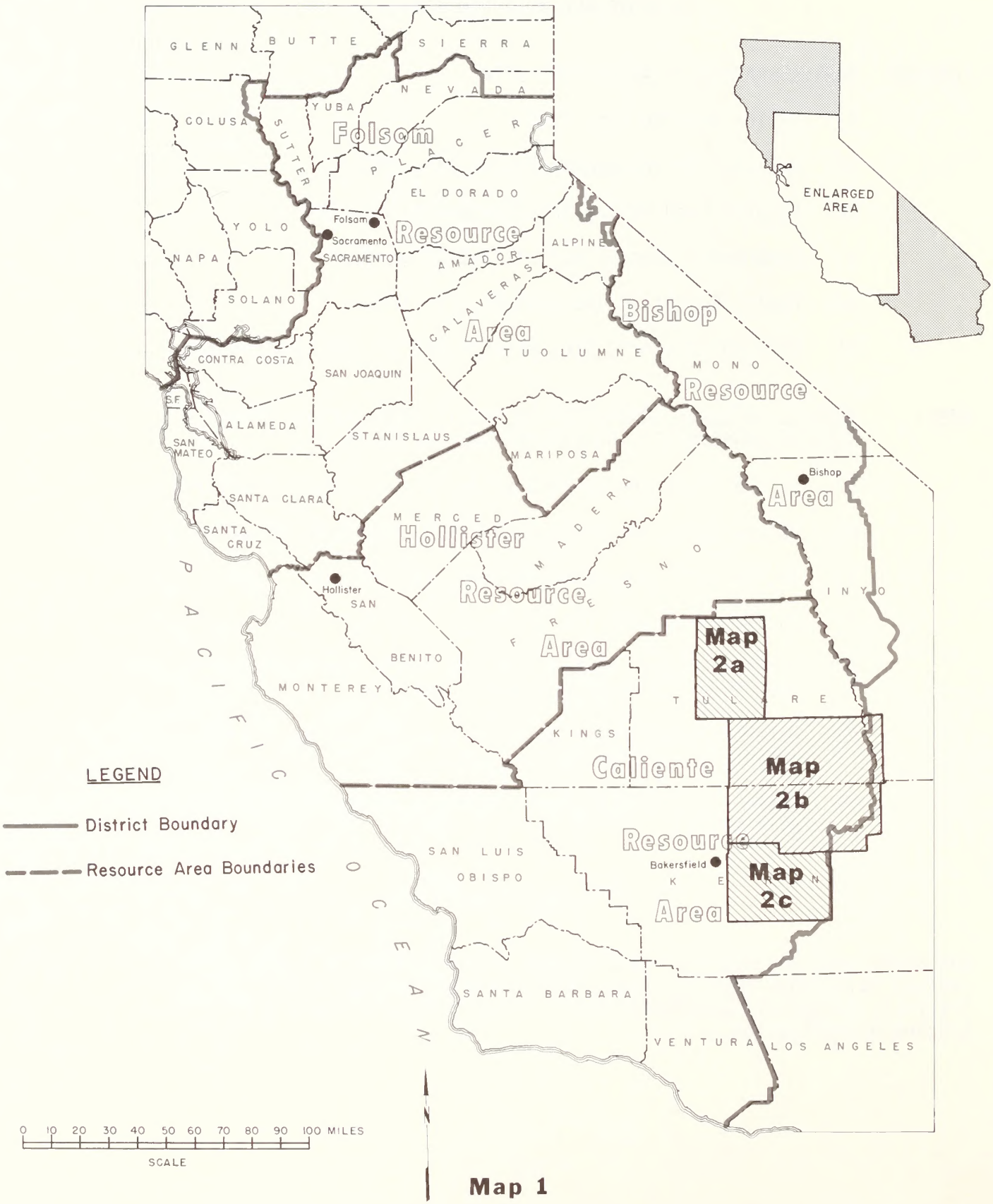
Location of Study Area

The study area encompasses approximately 246,000 acres of public land in central California (Map 1), that is administered by the Bakersfield District, Bureau of Land Management. Of this, 198,113 acres are under grazing authorization.

South Sierra Foothills
GRAZING ENVIRONMENTAL IMPACT STATEMENT

LOCATION MAP

Bakersfield District



Map 1

GENERAL LAND USE GOALS

1. Maintain proper amounts of residual mulch on annual ranges and optimize yearly production on perennial ranges to:

   a. Insure maximum annual plant reproduction the following year.

   b. Insure that adequate feed is left so livestock are not unduly forced to browse brush plants that otherwise would be utilized as wildlife feed and cover.

   c. Protect the watershed from erosion and enhance water quality.

   d. Protect the aesthetic values of the grazed areas.

2. Increase forage production and availability for livestock and wildlife. Forage production will be increased by prescribed burns and rangeland management systems. Forage availability will be increased by additional water developments and fencing.

3. Further protect and enhance watershed and wildlife values by securing better distribution of livestock.

4. Protect cultural resource values and endangered plant and animal species and their respective habitats as required by law.

MAJOR ISSUES

1. Impact of Grazing On Wildlife

This issue has several subissues. Some are strong conflicts with grazing and are termed major subissues. Others are lesser conflicts or have importance only in certain areas (i.e., riparian zones), these are termed minor subissues.

The major subissues are:

A. Deer Habitat

Major Subissue: Critical winter deer habitat, migratory herd
- Walker Pass herd
- Mineral King herd *

Minor Subissue: Resident deer habitat
- Year-round deer use
- Seasonal deer use

B. Upland Game Habitat

Major Subissue: Critical Upland Game habitat
Minor Subissue: Other Upland Game habitat

C. Non Game Species Habitat

Major Subissue: Endangered Species Habitat
- California Condor feeding habitat
- San Joaquin Kit Fox habitat
- Slender Salamander habitat
- Kern Primrose Sphinx Moth habitat

Minor Subissue: Other Non-Game Species habitat

D. Water Sources (A Major Subissue)

2. Impact of Grazing on Water Quality and Watershed Protection

Certain water quality and watershed erosion problems are occurring in the study area. Several streams and springs have high levels of fecal coliform. The presence of fecal coliform indicates these sources have been contaminated by the excrement of warm blooded animals. Meadow erosion is causing sedimentation of streams and the lowering of the water table, thus converting wet meadows to dry meadows. Sheet, rill and gully erosion is occurring on or near certain roads in the study area used by off-road vehicles. In addition, gullying and collapsed streambanks are occurring at several locations.

* Deer that travel less than five miles.

3. Economic Impacts of Grazing Management

The economic dependence of the various allotments upon public land may be divided into three classes: High, Medium, and Low. These are defined as:

HIGH - Those allotments that are completely dependent upon public land for their viability. Public land is an integral part of the grazing operation. It could not exist without the land.

MEDIUM - Those allotments that are dependent upon public lands for their viability. The grazing operation, however, could probably exist in reduced capacity without the public land.

LOW - Those allotments that could operate well without public land. Public land provides supplemental forage. In many cases, the public land is contiguous to on several sides or surrounded by the allotee's private land.

4. Impact of Grazing On Recreation

Recreation and grazing interact on several of the allotments. Recreational pursuits that are impacted by grazing include:

a. North Fork of the Kaweah Area
   - Picnicking
   - Swimming
   - Fishing
   - Primitive Camping

   These conflicts are minimal, as cattle and recreationists usually use different areas.

b. Kern River Area (downstream from Isabella Dam)
   - Picnicking
   - Swimming
   - Fishing
   - Camping
   - White Water Rafting (put in sites)

c. Pacific Crest Trail Corridor
   - Day Hiking
   - Backpacking
   - Camping
   - Equestrian Use

Table 2 shows the allotments and issues.

Table 2
South Sierra Foothills Allotments and Issues

Allotment Number	Allotment Name	Impact of Grazing On Wildlife	Impact of Grazing On Water Quality and Watershed Protection	Economic Impacts of Grazing Management	Impact of Grazing On Recreation
0017	North Fork River	Year-round resident deer habitat, non-critical upland game habitat.	Erosion hazard due to steep slopes.	Medium dependence.	Minimal conflicts on the North Fork of the Kaweah River with swimming, fishing, picnicking, and camping.
0074	Freedom Hill Common	Non-critical upland game bird habitat.	Gullying, collapsed streambanks, erosion hazard on steep slopes fecal coliform problems.	High dependence.	Not applicable.
0077	Walker Pass Common	Critical winter habitat for the Walker Pass deer herd. Critical upland game birds habitat.	Head cutting and resultant wet meadow degradation, fecal coliform problems, collapsed streambanks.	High dependence for forage and as a driveway between Forest Service and private land.	Livestock cause maintenance problems on the Pacific Crest Trail.
0078	Airport Common	Non-critical upland game habitat.	Erosion hazard on steep slopes.	High dependence.	Not applicable.
0082	Short Canyon	Critical upland game habitat, seasonal resident deer use.	Not applicable.	High dependence.	Not applicable.
0086	Cholla Canyon	Critical upland game habitat, seasonal resident deer use.	Erosion hazard due to steep slopes, this is minimized by low precipitation.	High dependence.	Not applicable.

Table 2 (cont.)

Allotment Number	Allotment Name	Impact of Grazing On Wildlife	Impact of Grazing On Water Quality and Watershed Protection	Economic Impacts of Grazing Management	Impact of Grazing On Recreation
0090	Wagy Flat Common	Year-round resident deer habitat, critical upland game bird habitat, non-game species habitat.	Gullying erosion hazard due to steep slopes fecal coliform problems.	High dependence.	Fishing, picnicking, camping, white water rafting put in sites.
0117	Red Mtn.	Non-critical upland game habitat.	Erosion hazard due to steep slopes.	High dependence.	Not applicable.
0118	Scodie	Critical winter habitat for the Walker Pass deer herd, non-game species habitat.	Head cutting and resultant wet meadow degradation.	High dependence.	Not applicable.
0114	Case Mtn.	Critical winter habitat for the Mineral King deer herd, non-game species habitat.	Gullying, sliding, erosion hazard due to steep slopes, fecal coliform problem.	Medium dependence. (Public land forms a link between two blocks of private land.)	Not applicable.
0033	Mankins Creek	Year-round resident deer habitat.	Erosion hazard due to steep slopes.	Low dependence.	Not applicable.

Table 2 (cont.)

Allotment Number	Allotment Name	Impact of Grazing On Wildlife	Impact of Grazing On Water Quality and Watershed Protection	Economic Impacts of Grazing Management	Impact of Grazing On Recreation
0036	Horn Mtn.	Critical winter deer habitat for the Mineral King deer herd.	Gullying, sliding, erosion hazard due to steep slopes.	Low dependence.	Not applicable.
0051	Studhorse Canyon	Year round resident deer habitat, non-critical upland game habitat.	Erosion hazard due to steep slopes, fecal coliform problems.	High dependence.	Not applicable.
0075	Kelso Peak	Year-round resident deer habitat.	Erosion hazard due to steep slopes, this is minimized by low precipitation.	Low dependence. The area has not been grazed for many years due to lack of livestock control.	Not applicable.
0080	Smith Canyon	Critical upland game habitat.	Gullying, fecal coliform problems.	Medium dependence.	Not applicable.
0083	Lynch Canyon	Non-critical upland game habitat.	Erosion hazard due to steep slopes.	Medium dependence.	Not applicable.

Table 2 (cont.)

Allotment Number	Allotment Name	Impact of Grazing On Wildlife	Impact of Grazing On Water Quality and Watershed Protection	Economic Impacts of Grazing Management	Impact of Grazing On Recreation
0084	Cyrus Canyon	Non-critical upland game habitat.	Erosion hazard due to steep slopes.	Medium dependence.	Not applicable.
0085	Cooks Peak	Non-critical upland game habitat.	Erosion hazard due to steep slopes, fecal coliform problems.	High dependence.	Not applicable.
0087	Havilah Common	Year-round habitat for resident deer, non-critical upland game habitat, non-game species habitat.	Erosion hazard due to steep slopes.	High to moderate dependence.	Not applicable.
0094	Comb Rocks (Decarteret)	Non-game species habitat.	Erosion hazard due to steep slopes, fecal coliform problems.	High dependence.	Not applicable.
0102	Burnt Point	Year-round resident deer habitat.	Erosion hazard due to steep slope.	Medium dependence.	Minimal conflicts along the North Fork of the Kaweah River with fishing, swimming, and picnicking.
0104	Washburn Cove	Critical winter deer habitat for the Mineral King deer herd.	Erosion hazard due to steep slopes, fecal coliform problems.	Medium dependence.	Not applicable.

Table 2 (cont.)

Allotment Number	Allotment Name	Impact of Grazing On Wildlife	Impact of Grazing On Water Quality and Watershed Protection	Economic Impacts of Grazing Management	Impact of Grazing On Recreation
0111	Sand Canyon (Knudson)	Non-critical upland game habitat.	Erosion hazard due to steep slopes.	Low dependence.	Not applicable.
0005	Blossom Peak	Year-round resident deer habitat.	Erosion hazard due to steep slopes.	Low dependence. Small lease on steep hillsides.	Not applicable.
0009	Badger Peak	San Joaquin Kit Fox habitat.	Minor erosion hazard due to some steep slopes.	Low dependence.	Not applicable.
0012	Live Oak Pass	Non-critical upland game habitat.	Minor erosion hazard due to some steep slopes.	Low dependence.	Not applicable.
0023	Rancheria Creek	Non-critical upland game habitat.	Minor erosion hazard due to some steep slopes.	Low dependence.	Not applicable.
0024	Bear Creek	Year-round resident deer habitat.	Erosion hazard due to steep slopes.	Low dependence.	Not applicable.

Table 2 (cont.)

Allotment Number	Allotment Name	Impacts of Grazing On Wildlife	Impact of Grazing On Water Quality and Watershed Protection	Economic Impacts of Grazing Management	Impacts of Grazing On Recreation
0034	Comb Rocks (Jones)	Non-game species habitat.	Erosion hazard due to steep slopes.	Low dependence.	Not applicable.
0040	Rio Bravo	San Joaquin Kit Fox habitat.	Minor erosion hazard due to some steep slopes.	Low dependence.	Not applicable.
0045	Goldpan Canyon	Non-critical upland game habitat, Kern Primrose Sphinx Moth habitat.	Erosion hazard due to steep slopes, fecal coliform problem.	Low dependence.	Not applicable.
0047	Rankin Ranch	Non-critical upland game habitat.	Erosion hazard due to steep slopes.	Low dependence.	Not applicable.
0048	Mountain Creek	California Condor feeding habitat.	Minor erosion hazard due to some steep slopes.	Low dependence.	Not applicable.

Table 2 (cont.)

Allotment Number	Allotment Name	Impact of Grazing On Wildlife	Impact of Grazing On Water Quality and Watershed Protection	Economic Impacts of Grazing Management	Impact of Grazing On Recreation
0049	Sand Canyon (Reed)	Habitat for non-game species, Slender Salamander habitat.	Erosion hazard due to steep slopes, fecal coliform problems.	Medium dependence.	Not applicable.
0052	Thompson Ridge	Non-critical upland game habitat.	Erosion hazard due to steep slopes.	Low dependence.	Not applicable.
0056	Round Mtn. Road	San Joaquin Kit Fox habitat.	Minor erosion hazard due to some steep slopes.	Low dependence.	Not applicable.
0059	Loco Bill Canyon	Non-critical upland game habitat.	Erosion hazard due to steep slopes.	Low dependence.	Not applicable.
0061	Oak Grove	Critical winter deer habitat for the Mineral King deer herd.	Erosion hazard due to steep slopes.	Low dependence.	Not applicable.

Table 2 (cont.)

Allotment Number	Allotment Name	Impacts of Grazing On Wildlife	Impact of Grazing On Water Quality and Watershed Protection	Economic Impact of Grazing Management	Impact of Grazing On Recreation
0066	Wagonshed Creek	Non-critical upland game habitat.	Erosion hazard due to steep slopes.	Low dependence.	Not applicable.
0071	Rancheria	California Condor feeding habitat.	Minor erosion problems from some steep slopes.	Low dependence.	Not applicable.
0076	Sacatar Meadow	Critical winter habitat for the Walker Pass deer herd.	Head cutting and resultant wet meadow degradation, collapsed streambanks.	Medium dependence.	Not applicable.
0079	Faye Canyon	Not applicable.	Not applicable.	Low dependence.	Not applicable.
0081	Nellie's Nipple	Non-critical upland game habitat.	Erosion hazard due to steep slopes.	Low dependence.	Not applicable.
0089	Bodfish	Not applicable.	Erosion hazard due to steep slopes.	High dependence.	Not applicable.

Table 2 (cont.)

Allotment Number	Allotment Name	Impacts of Grazing On Wildlife	Impacts of Grazing On Water Quality and Watershed Protection	Economic Impacts of Grazing Management	Impacts of Grazing On Recreation
0095	Progress Gulch	Non-critical upland game habitat, non-game species habitat.	Erosion hazard due to steep slopes.	Low dependence.	Minimal conflicts along the North Fork of the Kaweah River with fishing, swimming, and picnicking.
0103	Milk Ranch Peak	Critical winter habitat for the Mineral King deer herd.	Erosion hazard due to steep slopes.	Low dependence.	Not applicable.
0113	John's Peak	Non-critical upland game habitat.	Erosion hazard due to steep slopes.	Low dependence.	Not applicable.
0119	Bald Eagle Peak	Non-critical upland game habitat.	Erosion hazard due to steep slopes.	Medium dependence.	Not applicable.
0120	Spanish Needle Creek	Critical winter habitat for the Walker Pass deer herd.	Not applicable	Medium dependence.	Livestock cause maintenance problems on the Pacific Crest Trail.

DEVELOPMENT OF ALTERNATIVES

Selection of Alternatives

This environmental impact statement analyzes a proposed action and four other management alternatives. Alternative 1, the proposed action, represents the current grazing use levels on the EIS study area. It allows analysis of the present management as a basis of comparison with other management objectives.

Alternatives 2 , Livestock Maximization; Alternative 3, Resource Protection; and Alternative 4, Balanced Resource Use were developed to allow assessment of a range of livestock use. All of these alternatives are a product of the land use planning process.

Alternative 5, No Grazing, is required to allow the analysis of the elimination of grazing on public land, also as a basis of comparison with the other management objectives.

Managing for Mulch

This environmental impact statement is unique in that several alternatives allocate forage for livestock in terms of residual mulch rather than by the traditional Animal Unit Month (AUM) allocation. Managing for mulch would allow the authorized grazing use to be adjusted with the annual forage production. Increased grazing would be allowed on high production years and less grazing would be allowed on low production years. Livestock would be removed when the desired residual mulch level is reached. (Appendix A, provides a thorough discussion of this concept.)

With the traditional AUM allocation, the theoretical average yearly production level is estimated and grazing authorized at that level. Livestock are removed from the allotment when the authorized use level is reached, with no immediate compensation for the variable production.

Not all allotments in the study area can be managed for mulch. Mulch management is designed for annual ranges, and has no applicability to perennial ranges. Therefore, the perennial ranges will be managed by the traditional AUM allocation.

Mulch management will only be considered for Category "I" allotments. (See "Selective Management Categories" on the following page) Active preference levels on these allotments will not be initially adjusted. At the end of the grazing season, or when the mulch level specified has been reached, livestock will come off the allotment. The grazing operator will submit an actual use grazing record that shows the number of livestock grazed and the length of grazing time. This actual use record will be used to compute the annual grazing bill. Livestock grazing will not begin again until the next year annual forage growth begins, unless full utilization was not made in the previous grazing season.

In addition it should be noted, that Table 3, contained in Chapter 2, will only display pounds of residual forage per acre that will be left following the grazing season on those allotments proposed to be managed under mulch management. For Alternative 4, Balanced Resource Use, the Preference level would not change since it is currently the best estimate of average annual use. It can be assumed with this alternative that the proposed mulch levels would result in the same average annual use as the current preference level.

Additionally it should be stated that for Alternative 2, average annual use would be slightly higher (up to 10%) than the current preference, and the average annual use for Alternative 3 would be lower (down to 15%) than current preference. These estimates were used for the economic impact analysis for each alternative.

By using the Mulch Management Method, proper utilization is never exceeded and the most efficient use of the forage by the livestock can be made. Thus, this method of grazing management satisfies all resource management objectives.

SELECTIVE MANAGEMENT CATEGORIES

Included in Alternatives 1, 2, 3, and 4, is a classification of allotments into "Selective Management Categories". This approach is based upon a central concept that:

(1) grazing allotments can be grouped into three resource management categories according to renewable resource, socio-economic, and management criteria;

(2) the intensity of grazing management can be formulated based on the level of resource management needed for allotments within each category; and

(3) the grouping of grazing allotments between and within categories can establish a priority ranking for the investment of public funds and management efforts.

Allotments sharing similar characteristics were grouped into one of three management categories. Category "I" for improve. Category "M" for maintain, and Category "C" for custodial. The category assignments are displayed on Tables 3 - 5.

Since these categories are only proposed at this time, final allotment groupings for management categories will not be made until this EIS process has been completed.

The resource and management characteristics of allotments within each category are as follows:

Category I Characteristics

- Principal objective - to improve resource conditions.
- Current management inadequate and can be improved.
- Vegetation production below potential with opportunity to increase.
- Resource conflicts and concerns evident.
- High potential for positive economic return.
- Size relatively large.
- Land status displays well blocked public lands.

Category M Characteristics

- Principal objective - to maintain or improve the existing situation.
- Current management acceptable or may require minor adjustments.
- Vegetation production at or near potential.
- Limited or no resource conflicts.
- Possible limited positive economic return.
- Land status may display well blocked public lands.

Category C Characteristics

- Principal objective - to prevent deterioration of conditions.
- Vegetation production low with limited potential to increase.
- Resource conflicts and concerns limited.
- Little potential for positive economic return.
- Size relatively small.
- Land status variable, but generally contains significant private lands.

SELECTIVE MANAGEMENT GUIDELINES

Alltoments grouped into selective management categories would be managed as outlined.

Class I - Improve
- Active preference adjustment may be recommended in the land use plan.
- Usually will involve mulch management (grazing is allowed until a specified residual mulch level is reached on key areas on an annual basis).
- Will have an Allotment Management Plan (AMP).
- Allotment utilization will be annually monitored.

Class M - Maintain
- Active preference will not be initially adjusted.
- Will only involve mulch management if the allotment is already managed under that system.
- May have an AMP.
- Allotment utilization will not be checked on an annual basis unless under mulch management.

Class C - Custodial
- Active preference will not be initially adjusted.
- Will not involve mulch management.
- Very limited uitlization monitoring.
- Usually will not involve an AMP.

CRITERIA USED FOR DETERMINING RESIDUAL MULCH OR ANIMAL UNIT MONTHS IN THE VARIOUS ALTERNATIVES

The vegetation production data displayed and used in the EIS were collected in the Rudnick Survey of the 1971 field season and the South Sierra Foothills Survey of the 1981 field season, using accepted Bureau methods (Occular Reconnaissance). Residual mulch levels were derived from the chart on page A-4 of Appendix 1. These data were needed to help determine areas suitable for continued livestock grazing and to provide the basis for developing a rangeland management program and management alternatives. The vegetation production data have also been used to identify and analyze impacts and mitigation of the proposed action and alternatives. Reviewers of this EIS, however, should recognize the limitations of vegetation inventory data. While these data are adequate for purposes of planning and analysis, they must be supported by the results of monitoring studies before making forage allocation decisions.

Planning and Environmental Analysis Process

The Proposed Action is only part of the planning process which contains three stages described below; information gathering, land use planning, and implementation of the plan. Public participation is an important part of each stage and plays a vital role in the entire planning process.

1. Information Gathering.
   - Issues and data needs.
   - Resource inventory.
   - Data assimilation and analysis.

2. Land Use Planning
   - Resource recommendations presented.
   - Grazing Alternatives formulated.
   - EIS prepared.
   - Land use decisions made.
   - Initial Rangeland Program Summary (RPS) developed, containing proposed grazing decisions based on consultation.
   - Final grazing decisions issued.

3. Implementation
   - Resource activity plans such as Allotment Management Plans (AMP's).
   - Implementation schedules depend on available funding for projects.

ALTERNATIVES

INCLUDING THE PROPOSED ACTION

CHAPTER 2 - ALTERNATIVES INCLUDING THE PROPOSED ACTION

This chapter includes:

1. A narrative description of five alternative grazing management plans, including the proposed action;
2. Objectives of the alternatives;
3. Tabular presentations of the proposed vegetation allocations and rangeland improvement projects by alternative and allotment.

Alternatives considered:

1. Proposed Action - (Present Management)
2. Livestock Maximization
3. Resource Protection
4. Balanced Resource Use
5. No Grazing

Objectives of the Alternatives:

1. Proposed Action - Continue the present management practices;
2. Livestock Maximization - Manage to maximize livestock production under the principles of sustained yield;
3. Resource Protection - Manage with the emphasis on wildlife and watershed protection;
4. Balanced Resource Use - Manage for the balanced use of the vegetation resource under the constraints of multiple use;
5. No Grazing - Eliminate grazing.

Alternative 1: Proposed Action - (Present Management)

The proposed action represents the present livestock grazing management for the study area. This alternative would allow for rangeland improvements as proposed by the livestock operator such as water developments and prescribed burns in chaparral.

Total grazing preference would remain at 14,299 AUM's. Tables 3-5 (Livestock Forage Allocations by Allotment) depict the total preference. In most cases active use is often much less than the total active preference, and this is especially so on larger operations. Ranchers that use less than their total active preference may simply activate more of this preference on favorable forage years. Ranchers that use all their preference and still have extra forage can apply for temporary non-renewable grazing privileges.

Ranchers could develop springs, conduct prescribed burns, and do other types of range improvements (See Table 6). An environmental assessment of all new rangeland improvements would be necessary for all alternatives.

No new Allotment Management Plans (AMP's) would be developed, and the two existing plans would not be modified except at the request of the rancher.

Nine allotments (136,804 acres) would be placed in the I Category; 14 allotments (28,793 acres) would go in the M Category, and 26 allotments (32,516 acres) would be put in the C Category. This alternative represents the traditional No Action Alternative.

Alternative 2: Livestock Maximization

The objective of this alternative is to achieve maximum livestock production within the constraints of sustained yield.

Forage would be allocated by residual mulch, not AUM's on the Mediterranean Annual I Category allotments in this alternative. This alternative would allot the maximum amount of the yearly annual production (standing crop) to livestock. It would leave a minimum amount of residual mulch. The amounts of mulch to be left on given slopes are presented in Table 3.

Perennial areas in I Category allotments, as well as all areas in M and C Category allotments will be managed for AUM's. Again, a maximum amount of forage is allocated to livestock. Numbers of AUM's are presented in Tables 3-5.

AMP's would be developed on all I Category allotments which do not already have one. The existing AMP's would be modified and improved to accommodate mulch management.

Many rangeland improvements, including a maximum amount of vegetation manipulation of both chaparral and pinyon pine, are proposed. These projects are presented in Table 7.

The same allotments are proposed for the I, M, and C Categories as for Alternative 1.

Alternative 3: Resource Protection

This alternative would achieve optimum wildlife production while still allowing for limited livestock production. It would also favor other resource values.

Category I allotments on the Mediterranean Annual Type would again be managed for mulch. More mulch would be left on the ground after grazing than in Alternative 2. Fewer AUM's would be allocated to livestock on the other allotments. Tables 3-5 presents these mulch or AUM amounts.

The same I, M, and C Category allotments are projected for this alternative as for Alternative 1.

AMP's would be necessary on the I Category allotments to manage for mulch. Fewer rangeland improvements would be implemented than in Alternatives 1 and 2. These proposed improvements are listed in Table 8.

Alternative 4: Balanced Resource Use

This alternative is intermediate between Alternative 2, Livestock Maximization and Alternative 3, Resource Protection. It allots as much forage as possible to livestock, after giving due consideration to wildlife, watershed, aesthetics, and other resources.

Again, areas in the I Category allotments in the Mediterranean Annual Type would be managed for mulch. Forage on the other allotments would be allocated by AUM's. Tables 3-5 present these mulch or AUM amounts.

The proposed allotments for the I, M, and C Categories are the same as for Alternatives 1, 2, and 3. AMP's on the I Category allotments would be necessary to manage for mulch.

Additional rangeland improvements, although not as many as in the Livestock Maximization Alternative, would be necessary. These are summarized in Table 9.

Alternative 5: No Grazing

This alternative would eliminate all grazing on public lands in the study area. Livestock would be phased out over a five-year period. Thus, there would be no authorized livestock grazing by the end of 1988. No new rangeland improvements, except fences to exclude livestock, would be constructed; existing improvements would be removed if they did not have other multiple use values, such as water for wildlife.

Livestock grazing on public land would be considered trespass. Livestock trailing across public land for brief periods would be permitted.

Many miles of fencing would be necessary. This fencing would be the responsibility of adjacent land owners in closed range areas such as Tulare County, but it would be the responsibility of the BLM in open range areas such as most of Kern County.

Table 3
Livestock Forage Allocation by Allotment[1, 2)]
I Category Allotments

Allotment Number	Allotment Name	Acreage of Public Land	1982 Total Preference AUM's	Surveyed AUM's	Present Season of Use	Percent Slope	Alt. 1 Proposed Action AUM's	Alt. 2 Livestock Maximization	Alt. 3 Resource Protection	Alt. 4 Balanced Resource Use	Alt. 5 No Grazing
0017	North Fork River	5,493	448	1,011	SL[3)]	0-25 26-50 51-75 76-100	448	500 lbs/ac 600 lbs/ac 750 lbs/ac 750 lbs/ac	700 lbs/ac 800 lbs/ac 1000 lbs/ac 1000 lbs/ac	600 lbs/ac 700 lbs/ac 900 lbs/ac 1000 lbs/ac	0
0074	Freedom Hill Common	4,000	596	425	3/1-5/15	0-25 26-50 51-75 76-100	596	200 lbs/ac 300 lbs/ac 400 lbs/ac 500 lbs/ac	400 lbs/ac 500 lbs/ac 600 lbs/ac 700 lbs/ac	300 lbs/ac 400 lbs/ac 500 lbs/ac 600 lbs/ac	0
0077[4)]	Walker[6)] Pass Common	90,506	3,054	2,073	11/1-6/30	0-25 26-50 51-75 76-100	3,054	200 lbs/ac 300 lbs/ac 400 lbs/ac 500 lbs/ac 1223 AUMs	400 lbs/ac 500 lbs/ac 600 lbs/ac 700 lbs/ac 611 AUMs	300 lbs/ac 400 lbs/ac 500 lbs/ac 600 lbs/ac 978 AUMs	0
0078	Airport Common	3,105	571	270	3/1-5/15	0-25 26-50 51-75 76-100	571	200 lbs/ac 300 lbs/ac 400 lbs/ac 500 lbs/ac	400 lbs/ac 500 lbs/ac 600 lbs/ac 700 lbs/ac	300 lbs/ac 400 lbs/ac 500 lbs/ac 600 lbs/ac	0
0082	Short Canyon	3,260	150	363	2/1-4/30	0-25 26-50 51-75 76-100	150	200 lbs/ac 300 lbs/ac 400 lbs/ac 500 lbs/ac	400 lbs/ac 500 lbs/ac 600 lbs/ac 700 lbs/ac	300 lbs/ac 400 lbs/ac 500 lbs/ac 600 lbs/ac	0
0086	Cholla Canyon	4,572	1,825	324	3/24-6/1	0-25 26-50 51-75 76-100	1,825	200 lbs/ac 300 lbs/ac 400 lbs/ac 500 lbs/ac	400 lbs/ac 500 lbs/ac 600 lbs/ac 700 lbs/ac	300 lbs/ac 400 lbs/ac 500 lbs/ac 600 lbs/ac	0
0090[4)]	Wagy Flat Common	10,138	914	1,260	3/1-8/31	0-25 26-50 51-75 76-100	914	300 lbs/ac 400 lbs/ac 500 lbs/ac 600 lbs/ac 647 AUMs	500 lbs/ac 600 lbs/ac 700 lbs/ac 800 lbs/ac 324 AUMs	400 lbs/ac 500 lbs/ac 600 lbs/ac 700 lbs/ac 518 AUMs	0

Table 3 (cont.)

Allotment Number	Allotment Name	Acreage of Public Land	1982 Total Preference AUM's	Surveyed AUM's	Present Season of Use	Percent Slope	Alt. 1 Proposed Action AUM's	Alt. 2 Livestock Maximization	Alt. 3 Resoruce Protection	Alt. 4 Balanced Resource Use	Alt. 5 No Grazing
0117	Red Mountain	8,840	309	327	3/1-10/30	0-25 26-50 51-75 76-100	309	400 lbs/ac 500 lbs/ac 600 lbs/ac 700 lbs/ac	600 lbs/ac 700 lbs/ac 800 lbs/ac 900 lbs/ac	500 lbs/ac 600 lbs/ac 700 lbs/ac 800 lbs/ac	0
0118[5)]	Scodie	6,890	182	315	6/1-11/15	-	182	315 AUMs	158 AUMs	252 AUMs	0
Totals		136,804	8,049	6,368			8,049				

1) Annual Range Allocations for Alternatives 2, 3, 4 are given in lbs. of mulch per acre. When the desired mulch level (utilization) is reached, livestock grazing will cease until the next year annual forage growth begins. Perennial forage allocations are given in AUM's.

2) All operations are cow-calf.

3) SL = Season Long

4) These allotments have both annual and perennial range areas. Annual area allocations are given in lbs. of mulch per acre in Alternatives 2, 3, and 4; remaining allocations are in AUMs.

5) This allotment will be managed as a perennial allotment.

6) This document deals only with that portion of the allotment contained in the Bakersfield District.

Table 4
Livestock Forage Allocation By Allotment[1,2)]
M Category Allotments

Allotment Number	Allotment Name	Acreage of Public Land	1982 Total Preference AUM's	Surveyed AUM's	Present Season of Use	Alt. 1 Proposed Action AUM's	Alt. 2 Livestock Maximization AUM's	Alt. 3 Resource Protection AUM's	Alt. 4 Balanced Resource Use AUM's	Alt. 5 No Grazing AUM's
0014[3)]	Case Mountain	2,031	170	4)	SL[5)]	170	170	85	136	0
0033[3)]	Mankins Creek	476	80	120	SL	80	120	96	108	0
0036[3)]	Horn Mountain	1,582	99	120	SL	99	120	60	96	0
0051[3)]	Studhorse Canyon	1,106	197	228	3/1-5/30	197	228	182	205	0
0075[3)]	Kelso Peak	3,020	593	103	2/1-5/15	593	103	82	93	0
0080[3)]	Smith Canyon	5,088	80	280	SL	80	280	168	224	0
0083[3)]	Lynch Canyon	1,040	65	128	3/1-4/30	65	128	102	115	0
0084[3)]	Cyrus Canyon	2,270	230	103	SL	230	130	104	117	0
0085[3)]	Cooks Peak	3,025	217	364	3/1-5/15	217	364	291	328	0
0087[3)]	Havilah Common	4,160	371	282	7/1-2/28	371	282	226	254	0
0094[3)]	Comb Rocks	399	100	110	10/1-6/30	100	110	88	99	0
0102[3)]	Burnt Point	1,184	79	114	SL	79	114	91	103	0

Table 4 (continued)

Allotment Number	Allotment Name	Acreage of Public Land	1982 Total Preference AUM's	Surveyed AUM's	Present Season of Use	Alt. 1 Proposed Action AUM's	Alt. 2 Livestock Maximization AUM's	Alt. 3 Resource Protection AUM's	Alt. 4 Balanced Resource Use AUM's	Alt. 5 No Grazing AUM's
0104[3]	Washburn Cove	710	118	126	3/1-9/30	118	126	63	101	0
0111[3]	Sand Canyon	2,702	365	319	SL	365	319	225	287	0
Totals		28,793	2,764	2,397		2,764	2,594	1,863	2,266	0

1) Forage allocations expressed in AUM's

2) All operations cow-calf

3) Annual Range

4) Not surveyed

5) SL = Season Long

Table 5
Livestock Forage Allocations by Allotment[1,2)]
C Category Allotments

Allotment Number	Allotment Name	Acreage of Public Land	1982 Total Preference AUM's	Surveyed AUM's	Present Season of Use	Alt. 1 Proposed Action AUM's	Alt. 2 Livestock Maximization AUM's	Alt. 3 Resource Protection AUM's	Alt. 4 Balanced Resource Use AUM's	Alt.. 5 No Grazing AUM's
0005[3)]	Blossom Peak	80	7	20	3/1-6/1	7	20	10	16	0
0009[3)]	Badger Creek	160	37	5)	4/1-10/1	37	37	19	30	0
0012[3)]	Live Oak Pass	280	70	5)	6/1-9/30	70	70	56	63	0
0023[3)]	Rancheria Creek	140	63	28	4/1-10/1	63	28	22	25	0
0024[3)]	Bear Creek	452	10	5)	SL[6)]	10	10	8	9	0
0034[3)]	Comb Rocks	320	39	39	SL	39	39	31	35	0
0040[3)]	Rio Bravo	401	100	5)	SL	100	100	50	80	0
0045[3)]	Goldpan Canyon	440	74	11	SL	74	11	9	10	0
0047[3)]	Rankin Ranch	2,650	442	280	SL	442	280	224	252	0
0048[3)]	Mountain Creek	264	88	5)	SL	88	88	70	79	0
0049[3)]	Sand Canyon	678	113	94	SL	113	94	75	85	0

Table 5 (cont.)

Allotment Number	Allotment Name	Acreage of Public Land	1982 Total Preference AUM's	Surveyed AUM's	Present Season of Use	Alt. 1 Proposed Action AUM's	Alt. 2 Livestock Maximization AUM's	Alt. 3 Resource Protection AUM's	Alt. 4 Balanced Resource Use AUM's	Alt. 5 No Grazing AUM's
0052[3)]	Thompson Ridge	1,250	63	5)	SL	63	63	50	57	0
0056[3)]	Round Mountain Road	480	80	5)	2/28-11/1	80	80	40	64	0
0059[3)]	Loco Bill Canyon	1,040	134	50	4/1-10/1	134	50	40	45	0
0061[3)]	Oak Grove	2,832	237	77	4/1-9/30	237	77	39	62	0
0066[3)]	Wagonshed Creek	240	22	5)	SL	22	22	18	20	0
0071[3)]	Rancheria	194	49	5)	SL	49	49	39	44	0
0076[4)]	Sacatar Meadows	6,085	96	69	3/1-10/31	96	69	35	55	0
0079[3)]	Faye Canyon	527	64	8	3/1-4/30	64	8	6	7	0
0081[3)]	Nellie's Nipple	4,920	1,104	49	3/15-10/14	1,104	49	39	44	0
0089[3)]	Bodfish	280	14	5)	3/1-9/30	14	14	11	13	0
0095[3)]	Progress Gulch	480	80	5)	3/1-6/30	80	80	64	72	0
0103[3)]	Milk Ranch Peak	1,980	132	32	3/1-9/30	132	32	16	26	0

Table 5 (cont.)

Allotment Number	Allotment Name	Acreage of Public Land	1982 Total Preference AUM's	Surveyed AUM's	Present Season of Use	Alt. 1 Proposed Action AUM's	Alt. 2 Livestock Maximization AUM's	Alt. 3 Resource Protection AUM's	Alt. 4 Balanced Resource Use AUM's	Alt. 5 No Grazing AUM's
0113[3]	John's Peak	960	160	51	SL	160	51	41	46	0
0119[3]	Bald Eagle Peak	2,223	168	61	7/1-2/28	168	61	49	55	0
0120[4]	Spanish Needle Creek	3,160	40	19	3/1-4/30	40	19	10	15	0
Total		32,516	3,486	888		3,446	1,501	1,071	1,309	0

1) Forage allocations expressed in AUM's

2) All operations cow-calf

3) Annual Range

4) Perennial Range

5) Unsurveyed

6) SL = Season Long

Table 6
Alternative 1: Proposed Action - (Present Management)
Rangeland Improvements, I Category Allotments

Allotment Number	Allotment Name	Fences Miles	Fences Acres Disturbed	Spring[1] Developments No.	Spring[1] Developments Acres Disturbed	Ungulate[1] Guzzlers No.	Ungulate[1] Guzzlers Acres Disturbed	Cattle Guards	Vegetation[2] Manipulation Acres
0017	North Fork River	0	0	3	0.6	0	0	0	680
0074	Freedom Hill Common	0	0	0	0	0	0	0	0
0077	Walker Pass Common	1	1	6	1.2	0	0	0	0
0078	Airport Common	0	0	0	0	0	0	0	0
0082	Short Canyon	0	0	0	0	1	2	0	0
0086	Cholla Canyon	0	0	0	0	1	2	1	0
0090	Wagy Flat Common	0	0	1	0.2	0	0	1	800
0117	Red Mountain	0	0	1	0.2	0	0	0	800
0118	Scodie	0	0	2	0.4	0	0	0	0
Totals	-	1	1	13	2.6	2	4	2	2,280

1) Includes troughs
2) Only areas identified as potentially suitable for grazing will be treated.

Table 6 (cont.)

Allotment Number	Allotment Name	Fences Miles	Fences Acres Disturbed	Spring[1] Developments No.	Spring[1] Developments Acres Disturbed	Ungulate[1] Guzzlers No.	Ungulate[1] Guzzlers Acres Disturbed	Cattle Guards	Vegetation[2] Manipulation Acres
0014	Case Mtn.	0	0	2	0.4	0	0	0	800
0033	Mankins Ck.	0	0	1	0.2	0	0	0	0
0036	Horn Mtn.	0	0	2	0.4	0	0	0	700
0051	Studhorse Canyon	0	0	2	0.4	0	0	0	150
0075	Kelso Pk.	0	0	0	0	1	2	0	0
0080	Smith Cyn.	0	0	0	0	1	2	0	0
0083	Lynch Cyn.	0	0	0	0	1	2	0	0
0084	Cyrus Cyn.	0	0	0	0	1	2	0	0
0085	Cooks Pk.	0	0	1	0.2	0	0	0	0
0087	Havilah Common	0	0	1	0.2	0	0	1	1500
0094	Comb Rocks	0	0	1	0.2	0	0	0	0
0102	Burnt Pt.	0	0	0	0	0	0	0	80
0104	Washburn Cove	0	0	1	0.2	0	0	0	0
0111	Sand Cyn.	0	0	1	0.2	0	0	0	100
Totals	-	0	0	12	2.4	4	8	1	3330

1) Includes Troughs
2) Only areas identified as potentially suitable for grazing will be treated.

Table 7
Alternative 2: Livestock Maximization
Rangeland Improvements, I Category Allotments

Allotment Number	Name	Fences Miles	Fences Acres Disturbed	Spring[1] Developments No.	Spring[1] Developments Acres Disturbed	Ungulate[1] Guzzlers No.	Ungulate[1] Guzzlers Acres Disturbed	Cattle Guards	Vegetation[2] Manipulation Acres
0017	N. Fork River	0	0	4	0.8	0	0	0	680
0074	Freedom Hill Common	0	0	0	0	2	4	0	0
0077	Walker Pass Common	11	11	8	1.6	0	0	0	3000
0078	Airport Common	0	0	0	0	2	4	0	0
0082	Short Canyon	0	0	0	0	3	6	1	0
0086	Cholla Canyon	0	0	0	0	4	8	1	0
0090	Wagy Flat Common	3	3	2	0.4	0	0	2	800
0117	Red Mtn.	0	0	3	0.6	0	0	0	800
0118	Scodie	0	0	3	0.6	0	0	0	800
Totals	-	14	14	20	4.0	11	22	4	6080

1) Includes troughs
2) Only acres identified as potentially suitable for livestock grazing will be treated.

Table 7 (cont.)

M Category Allotment Number	Name	Fences Miles	Fences Acres Disturbed	Spring[1] Developments No.	Spring[1] Developments Acres Disturbed	Ungulate[1] Guzzlers No.	Ungulate[1] Guzzlers Acres Disturbed	Cattle Guards	Vegetation[2] Manipulation Acres
0014	Case Mtn.	0	0	3	0.6	0	0	0	800
0033	Manikin Creek	0	0	2	0.4	0	0	0	0
0036	Horn Mtn.	0	0	3	0.6	0	0	0	700
0051	Studhorse Canyon	0	0	3	0.6	0	0	0	150
0075	Kelso Pk.	0	0	0	0	2	4	0	0
0080	Smith Cyn.	0	0	0	0	2	4	0	0
0083	Lynch Cyn.	0	0	0	0	2	4	0	0
0084	Cyrus Cyn.	0	0	0	0	2	4	0	0
0085	Cooks Pk.	0	0	2	0.4	0	0	0	0
0087	Havilah Common	0	0	2	0.4	0	0	1	1500
0094	Comb Rocks	0	0	1	0.2	0	0	0	0
0102	Burnt Pt.	0	0	0	0	2	4	0	80
0104	Washburn Cove	0	0	1	0.2	0	0	0	0
0111	Sand Cyn.	0	0	3	0.6	0	0	0	100
Totals	-	0	0	20	4.0	10	20	1	3330

1) Includes troughs
2) Only areas identified as potentially suitable for livestock grazing will be treated.

Table 8
Alternative 3: Resource Protection
Rangeland Improvements, I Category Allotments

Allotment Number	Name	Fences Miles	Fences Acres Disturbed	Spring[1] Developments No.	Spring[1] Developments Acres Disturbed	Ungulate[1] Guzzlers No.	Ungulate[1] Guzzlers Acres Disturbed	Cattle Guards	Vegetation[2] Manipulation Acres
0017	N. Fork River	0	0	1	0.2	0	0	0	200
0074	Freedom Hill Common	0	0	0	0	1	2	0	0
0077	Walker Pass Common	1	1	0	0	0	0	0	1000
0078	Airport Common	0	0	0	0	1	2	0	0
0082	Short Cyn.	0	0	0	0	1	2	1	0
0086	Cholla Cyn.	0	0	0	0	1	2	1	0
0090	Wagy Flat Common	0	0	0	0	0	0	2	200
0117	Red Mtn.	0	0	0	0	0	0	0	300
0118	Scodie	0	0	0	0	0	0	0	200
Totals	-	1	1	1	0.2	4	8	4	1900

1) Includes troughs
2) Only areas identified as potentially suitable for livestock grazing will be treated.

Table 8 (cont.)

M Category Allotment Number	Name	Fences Miles	Fences Acres Disturbed	Spring[1] Developments No.	Spring[1] Developments Acres Disturbed	Ungulate[1] Guzzlers No.	Ungulate[1] Guzzlers Acres Disturbed	Cattle Guards	Vegetation[2] Manipulation Acres
0014	Case Mtn.	0	0	0	0	0	0	0	400
0033	Mankins Creek	0	0	0	0	0	0	0	0
0036	Horn Mtn.	0	0	0	0	0	0	0	400
0051	Studhorse Canyon	0	0	0	0	0	0	0	0
0075	Kelso Pk.	0	0	0	0	1	2	0	0
0080	Smith Cyn.	0	0	0	0	1	2	0	0
0083	Lynch Cyn.	0	0	0	0	0	0	0	0
0084	Cyrus Cyn.	0	0	0	0	0	0	0	0
0085	Cooks Pk.	0	0	0	0	0	0	0	0
0087	Havilah Common	0	0	0	0	0	0	1	400
0094	Combs Rocks	0	0	0	0	0	0	0	0
0102	Burnt Pt.	0	0	0	0	0	0	0	40
0104	Washburn Cove	0	0	0	0	0	0	0	0
0111	Sand Cyn.	0	0	0	0	0	0	0	0
Totals	-	0	0	0	0	2	4	1	1240

1) Includes troughs
2) Only areas identified as potentially suitable for livestock grazing will be treated.

Table 9
Alternative 4: Balanced Resource Use
Rangeland Improvements, I Category Allotments

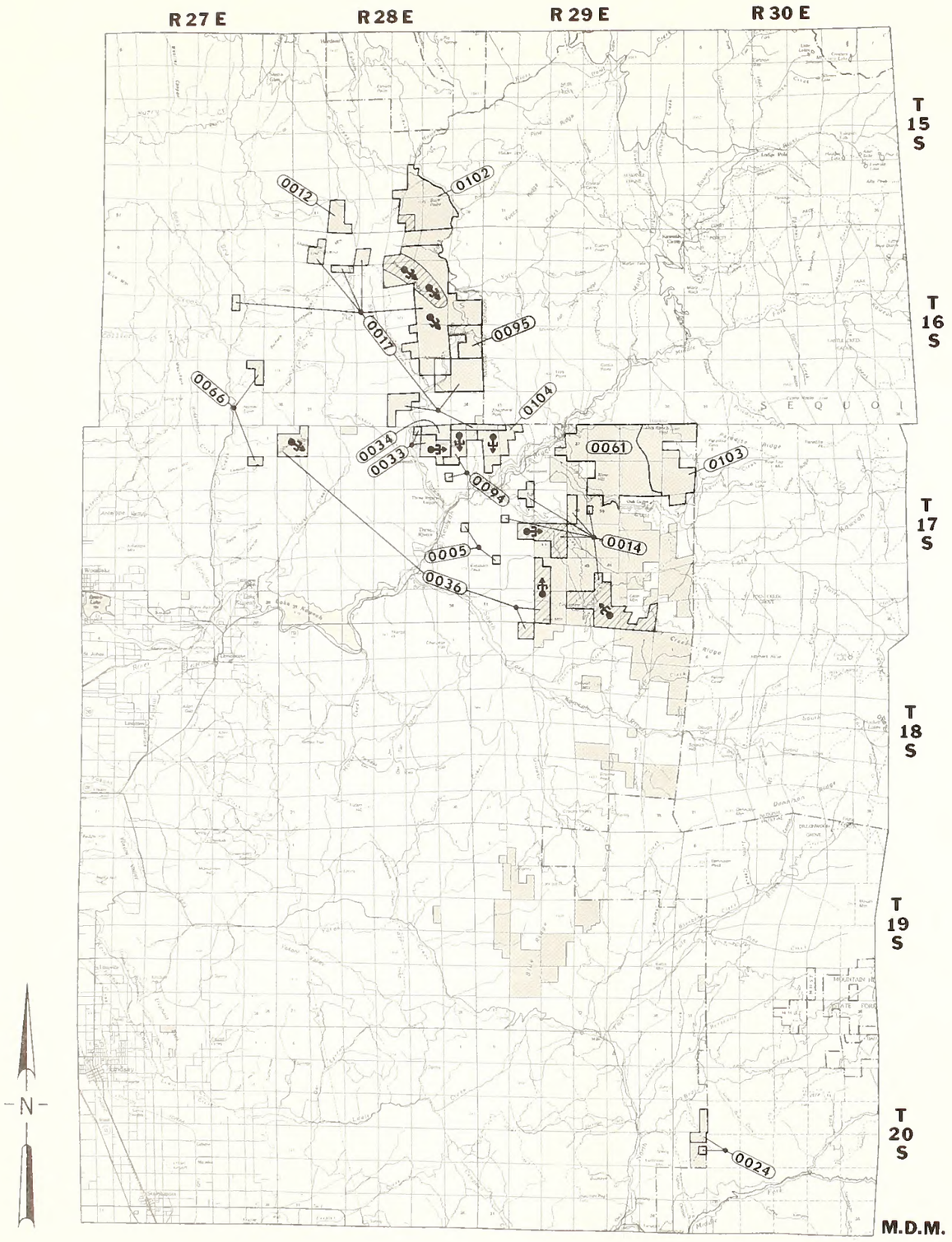
Allotment Number	Name	Fences Miles	Fences Acres Disturbed	Spring[1] Developments No.	Spring[1] Developments Acres Disturbed	Ungulate[1] Guzzlers No.	Ungulate[1] Guzzlers Acres Disturbed	Cattle Guards	Vegetation[2] Manipulation-Acres
0017	N. Fork River	0	0	3	0.6	0	0	0	680
0074	Freedom Hill Common	0	0	0	0	1	2	0	0
0077	Walker Pass Common	11	11	4	0.8	0	0	0	2000
0078	Airport Common	0	0	0	0	1	2	0	0
0082	Short Cyn.	0	0	0	0	2	4	1	0
0086	Cholla Canyon	0	0	0	0	2	4	1	0
0090	Wagy Flat Common	3	3	2	0.4	0	0	2	500
0117	Red Mtn.	0	0	2	0.4	0	0	0	400
0118	Scodie	0	0	2	0.4	0	0	0	500
Totals	-	14	14	13	2.6	6	12	4	4080

1) Includes troughs
2) Only areas identified as potentially suitable for livestock grazing will be treated.

Table 9 (cont.)

Allotment Number	Name	Fences Miles	Fences Acres Disturbed	Spring[1] Developments No.	Spring[1] Developments Acres Disturbed	Ungulate[1] Guzzlers No.	Ungulate[1] Guzzlers Acres Disturbed	Cattle Guard	Vegetation[2] Manipulation Acres
0014	Case Mtn.	0	0	2	0.4	0	0	0	800
0033	Mankins Creek	0	0	2	0.4	0	0	0	0
0036	Horn Mtn.	0	0	2	0.4	0	0	0	700
0051	Studhorse Canyon	0	0	2	0.4	0	0	0	100
0075	Kelso Pk.	0	0	0	0	2	4	0	0
0080	Smith Cyn.	0	0	0	0	2	4	0	0
0083	Lynch Cyn.	0	0	0	0	1	2	0	0
0084	Cyrus Cyn.	0	0	0	0	1	2	0	0
0085	Cooks Pk.	0	0	1	0.2	0	0	0	0
0087	Havilah Common	0	0	0	0	0	0	1	750
0094	Comb Rocks	0	0	1	0.2	0	0	0	0
0102	Burnt Pt.	0	0	0	0	1	2	0	80
0104	Washburn Cove	0	0	1	0.2	0	0	0	0
0111	Sand Cyn.	0	0	2	0.4	0	0	0	50
Total	-	0	0	13	2.6	7	14	1	2480

1) Includes troughs
2) Only areas identified as potentially suitable for livestock grazing will be treated.



Scale: 1/4 Inch equals 1 Mile

South Sierra Foothills

GRAZING ENVIRONMENTAL IMPACT STATEMENT

Map 2a - Northern part of Study Area

Grazing Allotments and Proposed Rangeland Improvement Projects for the Proposed Action

Legend

LAND STATUS

(0123) Public Land under Grazing Authorization

Public Land not under Grazing Authorization

Other Land

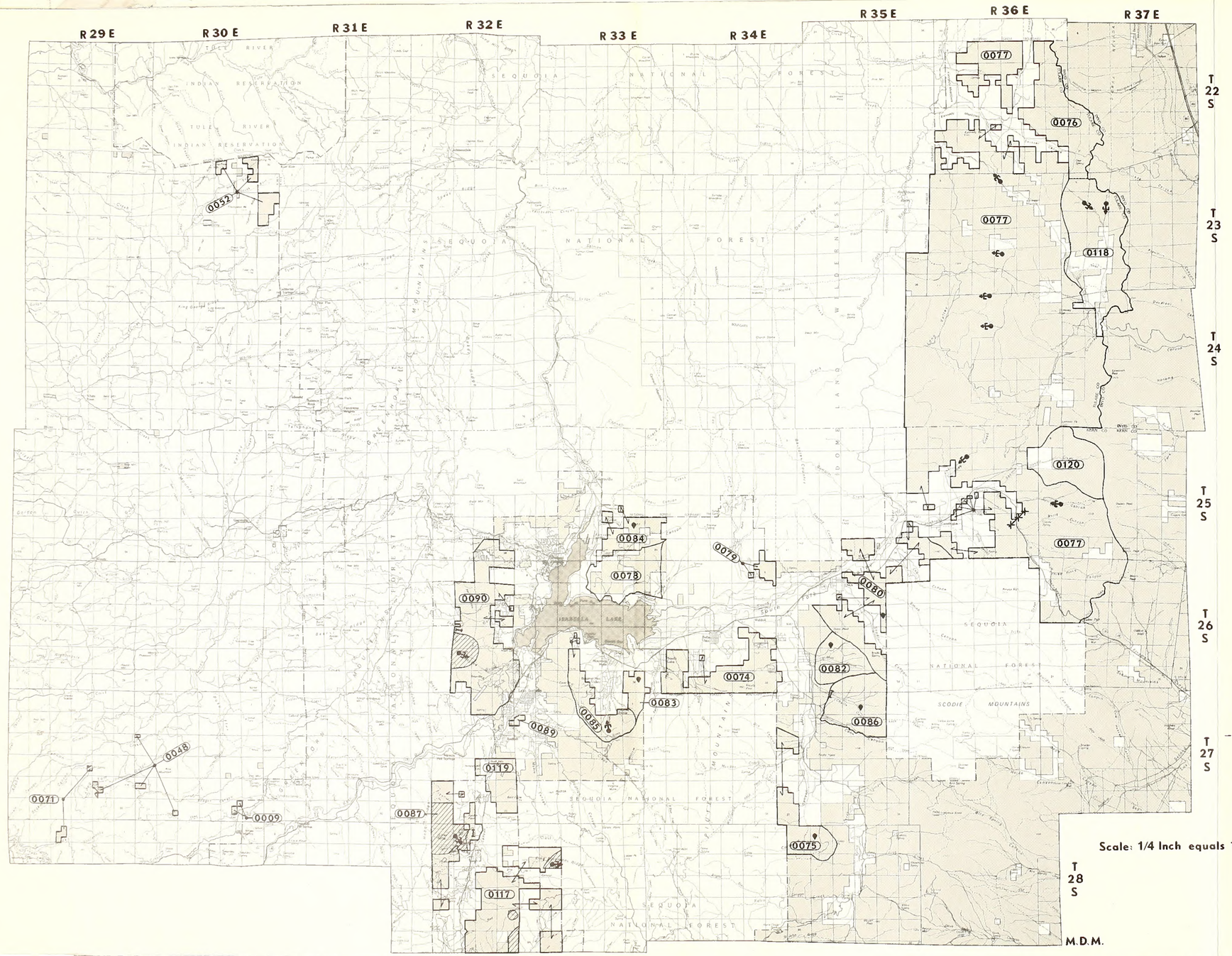
ALLOTMENTS

Number	Name
	Selective Management Category I (Improve)
0017	North Fork River
	Selective Management Category M (Maintain)
0014	Case Mountain
0033	Mankins Creek
0036	Horn Mountain
0094	Comb Rocks
0102	Burnt Point
0104	Washburn Cove
	Selective Management Category C (Custodial)
0005	Blossom Peak
0012	Live Oak Pass
0024	Bear Creek
0034	Comb Rocks
0061	Oak Grove
0066	Wagonshed Creek
0095	Progress Gulch
0103	Milk Ranch Peak

PROPOSED RANGE IMPROVEMENTS

Vegetation Manipulation

Spring



Scale: 1/4 Inch equals 1 Mile

N

South Sierra Foothills

GRAZING ENVIRONMENTAL IMPACT STATEMENT

Map 2 b - Central part of Study Area

Grazing Allotments and Proposed Rangeland Improvement Projects for the Proposed Action

Legend

LAND STATUS

- 0123 — Public Land under Grazing Authorization
- Public Land not under Grazing Authorization
- Other Land

ALLOTMENTS

Number	Name
	Selective Management Category I (Improve)
0074	Freedom Hill Common
0077	Walker Pass Common
0078	Airport Common
0082	Short Canyon
0086	Cholla Canyon
0090	Wagy Flat Common
0117	Red Mountain
0118	Scodie
	Selective Management Category M (Maintain)
0075	Kelso Peak
0080	Smith Canyon
0083	Lynch Canyon
0084	Cyrus Canyon
0085	Cooks Peak
0087	Havilah Common
	Selective Management Category C (Custodial)
0009	Badger Creek
0048	Mountain Creek
0052	Thompson Ridge
0071	Rancheria
0076	Sacatar Meadow
0079	Fay Canyon
0089	Bodfish
0119	Bald Eagle Peak
0120	Spanish Needle Creek

PROPOSED RANGE IMPROVEMENTS

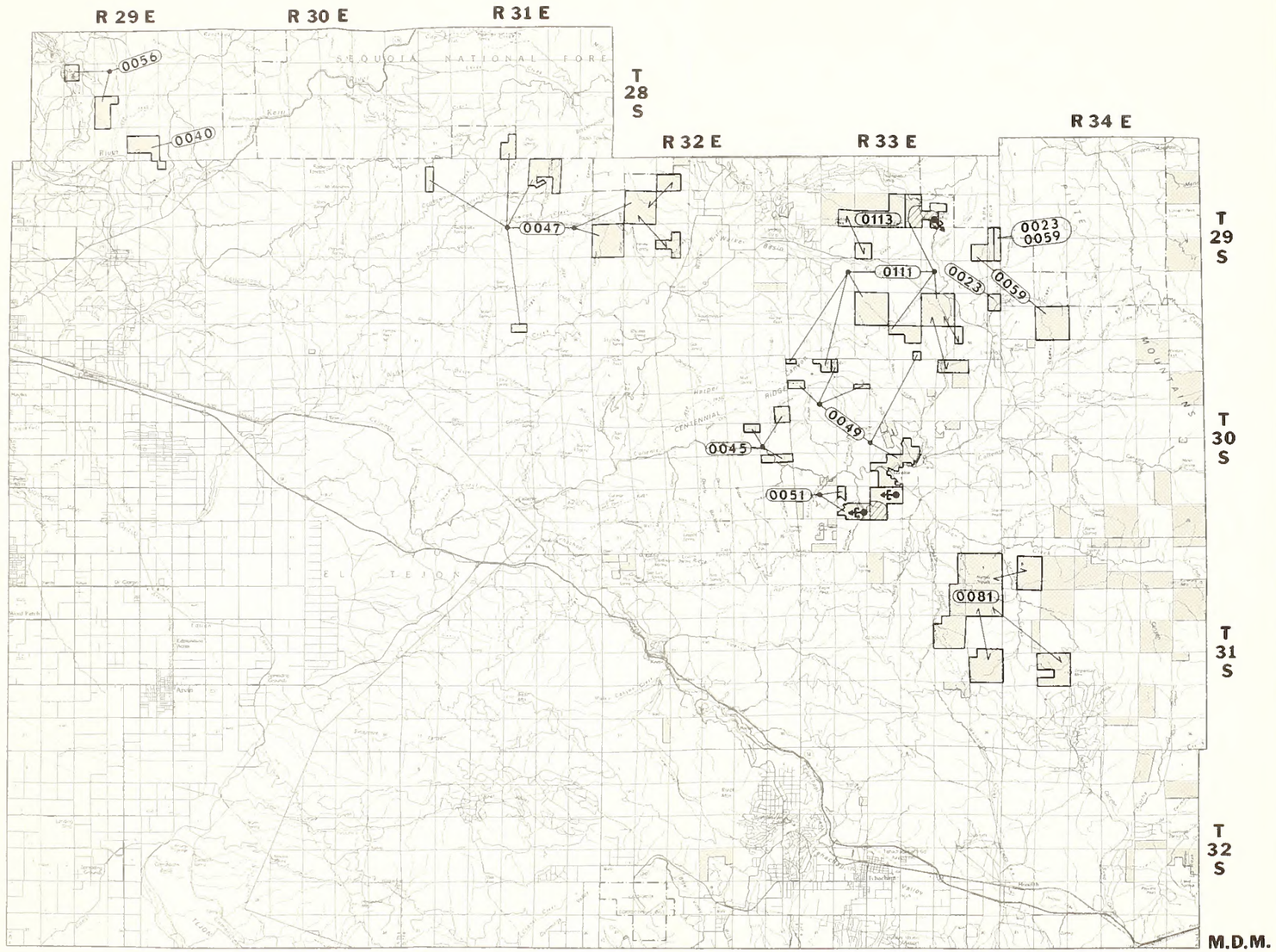
- Fence
- Ungulate Guzzler
- Vegetation Manipulation
- Spring
- Cattle Guard

South Sierra Foothills

GRAZING ENVIRONMENTAL IMPACT STATEMENT

Map 2c - Southern part of Study Area

Grazing Allotments and Proposed Rangeland Improvement Projects for the Proposed Action



Scale: 1/4 Inch equals 1 Mile

Legend

LAND STATUS

0123 — Public Land under Grazing Authorization

Public Land not under Grazing Authorization

Other Land

ALLOTMENTS

Number Name

Selective Management Category M (Maintain)

0051 Studhorse Canyon
0111 Sand Canyon (1092)

Selective Management Category C (Custodial)

0023 Rancheria Creek
0040 Rio Bravo
0045 Goldpan Canyon
0047 Rankin Ranch
0049 Sand Canyon (1048)
0056 Round Mountain Road
0059 Loco Bill Canyon
0081 Nellies Nipple
0113 Johns Peak

PROPOSED RANGE IMPROVEMENTS

Vegetation Manipulation

Spring

SPECIFICATIONS FOR RANGELAND IMPROVEMENTS

Fences
- Install per BLM specifications
- Disturbance = 1 acre per mile

Spring Developments
- Excavate spring source
- Install 3' x 3' galvanized metal, redwood, or fiberglass headbox
- Pipe water to trough
- Leave water at source for wildlife
- Pipe overflow into original drainage
- Fence meadow complex
- Disturbance = 0.2 acres each

Vegetation Manipulation
- Burning in chaparral or pinyon pine by approved prescription only.
- Selective cutting (e.g. for firewood) in pinyon pine areas that are uncondusive to burning or where sensitive resources would be damaged by burning. No chemical treatment proposed.

Ungulate Guzzler
- Clear and sterilize 3/4 to 1 acre for collection pad
- Spray parafin onto collection pad
- Bind diversion dike around pad
- Pipe water to buried storage tank
- Pipeline out to watering trough
- Install wildlife drinker
- Fence collection site
- Disturbance 2 acres each

Note: All figures are approximate.

TABLE 10

DEVELOPMENT AND MAINTENANCE COSTS

ALTERNATIVE 1

ITEM	QUANTITY	ESTIMATED UNIT COST	TOTAL	MAINTENANCE COSTS*	ESTIMATED LIFE OF PROJECTS (YEARS)
FENCES	1 mi	$ 4,000/mi	$ 4,000	$ 400	20+
SPRING DEVELOPMENTS	25	1,500	37,500	3,750	20+
CATTLE GUARDS	3	3,000	9,000	0	20+
UNGULATE GUZZLERS	6	30,000	180,000	6,000	20+
VEGETATION MANIPULATION	5,610 ac.	4/ac	22,440	0	5
TOTAL	-	-	$252,940	$10,150	-

TABLE 11

DEVELOPMENT AND MAINTENANCE COSTS ALTERNATIVE 2

ITEM	QUANTITY	ESTIMATED UNIT COST	TOTAL	MAINTENANCE COSTS*	ESTIMATED PROJECTS (YEARS)
FENCES	14 mi	$ 4,000/mi	$ 56,000	$ 5,600	20+
SPRING DEVELOPMENT	40	1,500	60,000	6,000	20+
CATTLE GUARDS	5	3,000	15,000	0	20+
UNGULATE GUZZLERS	21	30,000	630,000	21,000	20+
VEGETATION MANIPULATION	9,410 ac	4/ac	37,640	0	5
TOTAL	-	-	$798,640	$32,600	-

TABLE 12

DEVELOPMENT AND MAINTENANCE COSTS ALTERNATIVE 3

ITEM	QUANTITY	ESTIMATED UNIT COSTS	TOTAL	MAINTENANCE COSTS*	ESTIMATED PROJECTS (YEARS)
FENCES	1 mi	$ 4,000/mi	$ 4,000	$ 400	20+
SPRING DEVELOPMENT	1	1,500	1,500	150	20+
CATTLE GUARDS	5	3,000	15,000	0	20+
UNGULATE GUZZLERS	6	30,000	150,000	5,000	20+
VEGETATION MANIPULATION	3,140 ac	4/ac	12,560	0	5
TOTAL	-	-	$183,060	$5,550	-

* - Maintenance cost will be assumed by operator benefitted by project.

TABLE 13

DEVELOPMENT AND MAINTENANCE COSTS

ALTERNATIVE 4

ITEM	QUANTITY	ESTIMATED UNIT COSTS	TOTAL	MAINTENANCE COSTS*	ESTIMATED LIFE OF PROJECTS (YEARS)
FENCES	14 mi	$ 4,000 mi	$ 56,000	$ 5,600	20+
SPRING DEVELOPMENTS	26	1,500	39,000	3,900	20+
CATTLE GUARDS	5	3,000	15,000	0	20+
UNGULATE GUZZLERS	13	30,000	390,000	13,000	20+
VEGETATION MANIPULATION	6,560 ac	4 ac	26,240	0	5
TOTAL	-	-	$526,240	$22,500	-

* - Maintenance cost will be assumed by operator benefited by project.

STANDARD OPERATING PROCEDURES

Pre-Rangeland Project Development

1. BLM will conduct intensive cultural resource inventories (Class III) within the area(s) of potential project impact in accordance with the stipulations of the Rangeland Programmatic Memorandum of Agreement (RPMOA) between the Advisory Council on Historic Preservation, BLM, and the National Conference of State Historic Preservation Officers, dated January 14, 1980. Appropriate local Native Americans will be consulted, as required by the "Memorandum of Understanding (MOU), Pertaining to Bureau of Land Management, California, Policy for Native American Concerns and Cultural Resource Management," among the Native American Heritage Commission, the California State Historic Preservation Officer, and the BLM, California, dated March 4, 1980.

Projects will be planned to avoid cultural resource sites where possible. Where avoidance is not possible, procedures developed in the RPMOA will be followed, and consultation with appropriate local Native Americans will be made in accordance with the MOU.

2. Projects proposed adjacent or within the habitat of any federally listed threatened or endangered species will be analyzed to determine if the project may affect the species. If it is determined that the project may affect the listed species, formal consultation procedures will be initiated with the U.S. Fish and Wildlife Service (FWS) as required under Section 7 of the Endangered Species Act (ESA). Similar consideration will be afforded Federal candidate species except that consultation with the FWS will be on an informal basis. It is the Bureau's policy to protect, conserve, and manage for federally listed, state listed, or candidate species.

3. A visual resource contrast rating will be conducted for all construction sites (BLM Visual Resource Policy Manual 8400). Projects that would affect visual resources will be modified by design or relocation if necessary to comply with visual resource objectives.

4. Wilderness Study Areas will be regulated so as not to impair the suitability of these areas for preservation as wilderness. Management of these areas will be in accordance with the Interim Management Policy (IMP) and Guidelines for Lands Under Wilderness Review, (December 12, 1979).

5. Grazing management activity will also comply with the Clean Air Act (as amended) and public lands in the study area will be managed under the Class II designation. Lands under wilderness review will also be managed under Class II, as set forth in the IMP.

6. Grazing Management activity will comply with the Federal Water Pollution Control Act of 1972, as ammended by the Clean Air Act of 1977. Allotment Management Plans will include Best Management Practices (BMP's) to reduce water quality pollution pursuant to BLM's 208 Water Quality Management Report. As a part of the monitoring program, these BMP's will be evaluated for their adequacy in reducing water pollution.

PROJECT DESIGN GUIDELINES

1. Livestock watering and handling facilities will be located a minimum of 1200 feet from riparian zones, water sources susceptible to trampling, meadows and sensitive species habitat wherever feasible to minimize impacts to other resources.

2. Fences will not be located on sites that are highly susceptible to soil erosion or within one quarter mile of sensitive species habitat, if feasible.

3. Existing fences on critical winter deer range will, if necessary, be modified to meet BLM fence standards for deer ranges. New fence developments on critical deer winter ranges will be designed to meet BLM fence standards for these animals.

4. Natural barriers will be utilized to provide livestock movement control whenever possible. This will minimize the necessity for new fence construction.

5. Material used for rangeland improvements will be of a blending color-harmonious to the surrounding background to protect visual quality where possible. Safety considerations, however, may require that some developments (e.g., a fence that endangers off-road motor operators) be a contrasting color.

6. All existing and proposed livestock watering facilities will be designed to adequately facilitate wildlife water needs.

7. Removal of vegetation and surface disturbances will be minimized when developing rangeland improvements, and surface rehabilitation measures will be applied.

8. Water sources that are susceptible to livestock trampling will be fenced.

9. Vegetation manipulation will be planned under prescribed constraints that will assure protection of sensitive resources and the watershed. Vegetation will be treated to create a mosaic pattern which leaves ample wildlife cover. As relates to prescribed burning, the following actions will be taken; to control fires where natural barriers cannot be used, adequate fuelbreaks will be constructed. The width of fuelbreaks will be restricted to the minimum required to control the fire, depending on fuel type and arrangement. Fuelbreaks will be reseeded and water-barred to prevent erosion. Weather will be carefully monitored before and during burns to assure adherence to prescription constraints. Buffer strips will be established along both sides of streams to protect riparian vegetation, and around all Federally listed sensitive plant species habitat (generally a minimum of 75 feet), (BLM Manual 6740).

10. Rare, threatened, endangered, or sensitive species habitat, and cultural resources will be given appropriate consideration before any action(s) are taken (see Standard Operating Procedures.). In areas where no inventory data are available and there is the potential for high resource conflicts, efforts will be made to gather the needed data before the proposed actions are initiated.

MONITORING PROGRAMS

Adjustments of grazing management will be based on results obtained from the following monitoring evaluations. Monitoring programs will be initiated during the second phase of implementation.

Monitoring intensity will be variable depending upon allotment management category, special resource needs, and funding constraints. Generally, monitoring intensity would be moderate to high on I Category allotments, low to moderate on M Category allotments, and low on C Category allotments.

Monitoring program components will be as follows:

Utilization

Livestock will be counted on and off allotments where feasible. Mulch levels will be sampled by the photographic utilization method or double sample clip plot during and at the end of each grazing season on California Mediterranean Annual Ranges to determine when the desired mulch levels have been reached.

Utilization of key perennial forage and browse species will be monitored. The results of perennial plant utilization studies will be used in conjunction with annual plant utilization (mulch management) to determine the length of livestock grazing season or other needed management adjustments on Category I allotments.

Condition and Trend

Condition criteria will not be applied to Mediterranean Annual Ranges. Permanent photo plots and transects will be established on selected perennial key forage areas.

Actual Use

Actual use grazing records will be collected from each operator on I Category allotments.

Climate

Weather data will be collected and utilized. Existing rain gauges will be monitored. New rain gauges would be installed where needed.

RT&E Species

Populations and habitat of rare, threatened, and endangered species will be monitored within suitable grazing areas.

Recreation

Visitor site registers will be installed at major recreation sites and use supervision will be conducted by BLM and/or volunteer personnel on a scheduled basis.

Wildlife

Critical winter deer range will be sampled each spring to determine condition, trend and utilization. California Department of Fish and Game population estimates will be collected when available.

Cultural Resources

Periodical inspection and/or the taking of photographs will be completed on selected National Register quality sites and other sites with special significance to record changes in condition of sites.

Guidelines for the monitoring program, including priorities and frequency, will be outlined in a monitoring plan to be developed after final grazing program decisions are made.

Water Quality

Water Quality will be monitored to determine the effect of grazing practices and the results of stabilization efforts and application of Best Management Practices.

IMPLEMENTATION

The allocation levels selected will be a benchmark established for livestock use levels which will meet multiple use and sustained-yield objectives. Adjustments may be made the first year or phased over a five-year period, based on results of monitoring studies.

The Area Manager will have the authority to issue a new decision if monitoring information indicates that the amount of a scheduled suspension should be modified. However, if a decision is modified based on monitoring, the authorized livestock grazing use will be brought into balance with the updated allocation by the conclusion of the five-year term specified in the original decision.

Proposed range improvement facilities will be implemented as funds permit. Projects will be prioritized within the EIS study area based on an investment analysis (including benefit/cost analysis) of the project and funds contributed from other sources. Before project implementation, each project will go through a site-specific environmental assessment. The assessment will identify impacts from the project, particularly as it may affect rare, threatened, or endangered species habitat, or cultural resources. Consultation with interested groups or agencies will be initiated, if impacts are identified. Bureau policy on project implementation, construction standards, and land use planning objectives will be followed during project design and layout.

Implementation of the selected Alternative will be phased in as follows:

1. Consult with grazing operators;

2. Adjust stocking levels and season of use, implement AMP's using existing projects, develop monitoring plan;

3. Implement AMP's using new projects and projects needed for resource protection;

4. Adjust stocking levels based on the results of monitoring studies.

Table 14
Alternative and Impact Summary

Major Actions	Proposed Action	Livestock Maximization	Resource Protection	Balanced Resource Use	No Grazing
Allotment Categories					
- Intensive (number)	9	9	9	9	-
- Maintenance (number)	26	26	26	26	-
- Custodial (number)	14	14	14	14	-
Range Improvements					
- Fences (miles)	1	14	1	14	2,000 (estimated)
- Springs (number)	25	40	1	26	0
- Guzzlers (number)	6	21	6	13	0
- Cattle Guards (number)	3	5	5	5	0
- Vegetation Manipulation (acres)	5610	9410	3140	6560	0
Impacted Resources					
- Wildlife	Deterioration of habitat expected on several allotments. Certain wildlife populations would decline.	Deterioration of habitat expected on several allotments. Certain wildlife populations would decline.	Wildlife populations will remain at present levels.	Wildlife populations would temporarily fall on Class I allotments and remain at present levels on Class M & C allotments.	Wildlife populations would increase as habitat grows back. In the long term, decadent chaparral communities would support lower diversity and abundance of wildlife.
-Water Resources	Decline in water quality and channel stability of streams and springs.	Decline in water quality and channel stability of streams and springs.	Minor improvements in water quality and channel stability of streams and springs.	Decline in water quality and channel stability of streams and springs.	Moderate improvement in water quality and channel stability of streams and springs.

Table 14 (Cont.)

Impacted Resources	Proposed Action	Livestock Maximization	Resource Protection	Balanced Resource Use	No Grazing
- Soils	Localized impacts from proposed rangeland improvements. Vegetation manipulation expected to increase upslope erosion and sedimentation for first 3 years after a prescribed burn.	Increased localized impacts due to the larger number of rangeland improvements proposed. Increased erosion and sedimentation from vegetation manipulation.	Fewer localized impacts due to the reduction in the number of rangeland improvements proposed. Minor increase in erosion & sedimentation from vegetation manipulation.	Minor localized impacts from the number of rangeland improvements proposed. Minor increase in erosion and sedimentation from vegetation manipulation.	Moderate improvements in soil conditions on all allotments with the elimination of livestock.
- Socio-Economics	Opportunity for some increase in livestock forage.	Up to 55 percent reduction in reliable livestock forage/Class I allotments. Mulch levels for the given year would determine the actual allocation.	Up to 80 percent reduction in reliable livestock forage/Class I allotments. Mulch levels for the given year would determine the actual allocation.	Up to 65 percent reduction in reliable livestock forage/Class I allotments. Mulch levels for the given year would determine the actual allocation.	Approximately one-half of the livestock operators would be substantially affected.
- Recreation	Some decrease in quality of hunting and fishing experiences. Minor impact on whitewater rafting, swimming, picnicking and hiking experiences.	Some decrease in quality of hunting and fishing experiences. Moderate impact on all water related recreation. Moderate to high impact to trail experiences and conditions along the Pacific Crest Trail.	Hunting and fishing experiences would remain at present levels. Minor impact on whitewater rafting, swimming, picnicking and hiking experiences.	Hunting experiences would decrease on Class I allotments, and remain at present levels on Class M & C allotments. Some fishing experiences would decrease. Minor impact on whitewater rafting, swimming, picnicking and hiking experiences.	Hunting and fishing experiences would improve. Impacts to whitewater rafting swimming and picnicking experiences would be eliminated. Hiking experiences along the Pacific Crest Trail would improve. Maintenance costs on the Pacific Crest Trail would be reduced.

Table 14 (Cont.)

Impacted Resources	Proposed Action	Livestock Maximization	Resource Protection	Balanced Resource Use	No Grazing
- Vegetation	5610 acres altered by vegetation manipulation, leading to an increase in forage production. Some over obligation of competitive species.	9410 acres altered by vegetation manipulation, leading to an increase in forage production. Over obligation of competitive species.	3140 acres altered by vegetation manipulation, leading to a slight increase in forage production.	6560 acres altered by vegetation manipulation, leading to an increase in forage production.	Large mulch build-up causing a serious fire hazard.
- R T & E Plants	Potential deterioration of sensitive species habitat.	Potential deterioration of sensitive species habitat.	Does not eliminate all potential impacts, therefore there may be continued habitat deterioration for some sensitive species.	Same as Alternative 3, Resource Protection	Sensitive species habitat would generally improve in many areas, if currently impacted by livestock, with an expected increase in populations.
- Cultural Resources	2 recorded cultural resource sites may be impacted. An unknown number of unrecorded sites may be impacted.	19 recorded cultural resources sites may be impacted. An unknown number of unrecorded sites may be impacted.	3 recorded cultural resources sites may be impacted. An unknown number of unrecorded sites may be impacted.	17 recorded cultural resource sites may be impacted. An unknown number of unrecorded sites may be impacted.	An unknown number of cultural resources sites may be impacted. Generally, the condition of presently impacted sites would improve.
- Wilderness	0.5 miles of fence. 5 spring developments. No vegetative manipulation. No change in Active Preference AUM's.	3 miles of fence. 7 spring developments. 2,800 acres of vegetative manipulation. A 133 AUM increase in Active Preference.	0.5 miles of fence. No spring developments. 700 acres of vegetative manipulation. No change in Active Preference AUM's.	3 miles of fence. 5 spring developments. 2,000 acres of vegetative manipulation. A 70 AUM increase in Active Preference.	90+ miles of fence. No spring developments. No vegetative manipulation.

AFFECTED ENVIRONMENT

CHAPTER 3 - AFFECTED ENVIRONMENT

INTRODUCTION

This chapter provides ---

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1. A description of the existing EIS Study Area which will serve as a baseline for comparison with impacts projected in Chapter 4.

2. A description of only those components of the environment likely to be affected by implementation of the alternatives.

3. No consideration of those components not likely to be significantly impacted.

Components described include ---

1. Wildlife (includes Rare, Threatened, and Endangered Species)
2. Water Resources
3. Soils
4. Socio-Economics
5. Recreation
6. Vegetation (includes Rare, Threatened, and Endangered Species)
7. Cultural Resources
8. Wilderness

WILDLIFE

During 1980, ten habitats were sampled by field survey for birds, small mammals, reptiles and evidence of large mammal use. In addition, water sources were examined in the field by a team comprised of one biologist and one hydrologist.

SUB-ISSUES - In order to facilitate discussion and subsequent analysis of the impacts of grazing on wildlife, the text has been divided into sub-issues or headings which serve to concentrate discussion on certain specific areas.

Migratory Deer Habitat - Major Sub-Issue

Monache Herd - The Monache deer herd (also known as Monache-Walker Pass herd) uses public land in the Caliente Resource Area in the vicinity of Chimney Peak, Kennedy Meadows, and Long Valley. Long Valley is used heavily by wintering deer and has been classified by the California Department of Fish and Game as a "critical" winter deer forage area. Limiting factors which influence the survival of deer in this area include the availability of water, dense thermal cover and the amount of preferred forage. The population size of the herd was believed to be approximately 14,000 during the early 1950's (Longhurst 1982), but has dropped to between 6,000 and 7,000 animals to date. (California Department of Fish and Game 1980)

Mineral King Deer Herd - This herd (also known as the Kaweah herd) uses public land near Milk Ranch Peak and Case Mountain near Three Rivers, California. Public lands comprise about 17% of lands occupied by the herd. Although population estimates are lacking, it is known that this herd uses BLM lands primarily during the winter after the first snow fall (USFS 1965). Limiting factors which must be considered include amount of available forage and adequate cover.

Resident Deer Habitat - Minor Sub-Issue

In contrast to deer populations that make long migrations from high elevations in summer to lower elevations in the winter, resident deer remain close to the area in which they were raised and generally do not move more than 5 miles.

Resident deer inhabit most of the shrub type habitats in the South Sierra Foothills area.

Limiting factors for resident deer include the number of available fawning areas (grassy meadows), water, cover and available forage.

Some allotments are used year round by these deer and others get seasonal use because the deer make short movements downslope (less than 5 miles) to public lands from nearby U.S. Forest Service Lands.

Upland Game Habitat - Major Sub-Issue

"Critical" upland game (rabbits, quail, chukars, and partridge) habitat exists in areas that are hunted frequently or areas which previously held large numbers of small game species which traditionally attracted the interest of hunters. Areas such as; Cholla Canyon, Cave Canyon, Chimney Peak, Walker Pass and Wagy Flats are all part of the Monache-Walker Pass National Cooperative Land and Wildlife Management Area which contains critical upland game habitat. Limiting factors for upland game include the amount and quality of escape cover, nesting cover, food and water.

"Other" upland game habitat exists in areas that are not routinely or traditionally hunted. Limiting factors are the same as for critical upland game habitat (Minor Sub-Issue).

Non-Game Species Habitat

The major subissue in this category is endangered wildlife.

California Condor (Federal Endangered) - This species is known to feed and range over the western portion of the Sierra Foothills. BLM administers a small acreage (less than 600) which falls in the Critical Feeding Habitat designated in the Federal Register Volume 41, No. 187. Limiting factors for the condor include amount of food and frequency of disturbance and in a more general sense, amount of foraging space.

San Joaquin Kit Fox (Federal Endangered) - This species inhabits the foothills east of Bakersfield, and is known to occur on several small parcels of public land. Chief limiting factors for the Kit Fox include prey abundance, disturbance and suitable areas for denning.

Tehachapi Slender Salamander (State Endangered) - This species is known to occur on public lands in the Caliente Creek drainage. Limiting factors for this species include amount of available litter for cover, degree of moisture and availability of breeding areas.

Kern Primose Sphinx Moth (Federal Threatened) - Little is known about this species, but it is possible that moths use several small parcels of public land in the Walker Basin area. Limiting factors for the Sphinx Moth are thought to be linked to the availability of primrose patches in sandy areas.

The minor sub-issue in the non-game category includes other non-game species which are not classified as threatened or endangered but are nevertheless very important to the ecology of various habitats. Habitat maintenance for nesting and foraging are key factors in preserving these species in ecologically sound populations.

Water Sources - Major Sub-Issue

Water sources were classed as a major sub-issue due to the extreme dependence of many wildlife species upon available water. Seventy-five percent of the water sources were impacted by livestock in varying degrees.

The value of streams, springs, seeps and wells for wildlife depends upon adequate flow, clarity, and protective cover. The quality of guzzlers (water storage especially for wildlife) is directly dependent upon the density of cover surrounding the installation.

WATER RESOURCES

The study area falls within the Kaweah Subbasin of the Tulare Hydrologic Basin and the Kern Subbasin of the Buena Vista Hydrologic Basin. The Bureau conducted an inventory of water resources in 1980 and 1981 since very little hydrologic data was available (BLM Water Resource Inventory 1980 and 1981).

Discharges, water quality, channel stability, surface erosion and watershed conditions were recorded for streams throughout the area. Of the 69.8 miles of stream that were inventoried, 12.1 miles flow perennially and the remainder flow intermittently. Discharges of most streams are low and many are dry by late summer each year. Only the short reaches of the Kaweah and Kern Rivers and their major tributaries carry substantial perennial flows.

Generally, the water quality of streams is suitable for livestock and wildlife consumption but is unsuitable for human consumption, fisheries and recreation. Fecal coliform bacteria, which indicate contamination by the excrement of warm blooded animals, were found in all 14 of the streams that were tested. In addition, some streams have high water temperatures and high levels of total dissolved solids, iron and manganese. Each stream was assigned a water quality rating based on a comparison of physical, chemical, biological and bacteriological constituents with water quality standards (Table 15). These ratings must be considered approximate since each stream was only sampled once. Variations in water quality which occur with changes in land use, climatic conditions and seasonal and diurnal fluctuations in flow are not reflected in the rating.

Sediment is another common pollutant in 13 streams where gullying, sheet erosion, collapsed stream banks or minor sliding is occuring. This erosion is caused by cattle grazing, poor road construction and maintenance practices, improperly located and designed diversions, or natural soil instability. A stream channel stability rating indicated average channel conditions and susceptability to future disturbance (Table 15).

Discharges, water quality, and erosion conditions were obtained for 15 springs in the area. Discharges for the eight perennial springs were generally less than 0.7 cubic feet per second.

As with streams, spring waters are suitable for wildlife and livestock consumption but unsuitable for human consumption. Fecal coliform bacteria were found in the two springs that were tested. Some springs had high levels of total dissolved solids, iron and manganese.

Cattle grazing and poor road construction and maintenance practices have caused gullying and collapsed banks at some springs. This erosion contributes sediment as an additional pollutant.

Citation: BLM Water Resource Inventory, 1980 and 1981. On file at the Bakersfield District Office.

Consumptive water uses in the EIS area consist primarily of livestock and wildlife watering. Important nonconsumptive uses include aquatic habitat maintenance, wildlife habitat maintenance, riparian vegetation maintenance, aesthetic and visual resource maintenance and recreation use. These uses require that natural flows and good water quality be maintained.

Table 15
Affected Environment - Water Resources

	Stream	Miles on Public Land Perennial	Miles on Public Land Intermittent	Water Quality Rating 1)	Fecal Coliform Colonies/100ml	Stream Channel Stability Rating 2)	Types of Erosion
Kaweah Subbasin	Bennett Creek Trib. 1		1.9	Fair	20	Good	
	Kaweah River, EF 3)	2.6		Good	NT 6)	Good	
	Kaweah River, Trib. 1, EF		1.5	Fair	NT	Good	
	Kaweah River, Trib. 2, EF		1.5	Fair	NT	Good	
	Kaweah River, Trib. 3, EF		0.75	Good	NT	Good	
	Kaweah River, NF 4)	2.25		Fair	310	Good	
	Kaweah River, Trib. 1, NF		0.5	Fair	NT	Good	
	Kaweah River, Trib. 2, NF		0.8	Fair	NT	Poor	
	Kaweah River, Trib. 3, NF		0.8	Fair	NT	Fair	
	Salt Creek		2.2	Fair	NT	Fair to Good	Gullying
	Salt Creek, Trib. 1		0.6	Fair	NT	Good	Gullying & minor sliding
	Salt Creek, Trib. 2		0.6	Poor	NT	Good	Gullying & rilling

Table 15 (cont.)

	Stream	Miles on Public Land Perennial	Miles on Public Land Intermittent	Water Quality Rating 1)	Fecal Coliform Colonies/100ml	Stream Channel Stability Rating 2)	Types of Erosion
	Salt Creek, Trib. 3		0.5	Fair	NT	Good	Minor sliding
	Salt Creek, Trib. 3A		0.8	Poor	135	Good	
	Sheep Creek		0.15	Fair	NT	Good	
	Washburn Creek		0.8	Fair	11	Fair	
Kern Subbasin	Berts Canyon Creek		2.0	Fair	NT	Good	
	Bodfish Creek		1.2	Fair	14	Good	
	Caliente Creek	1.4		Fair	141	Good	Exposed soil and sheet erosion
	Canebrake Creek		5.3	Fair	201	Fair	
	Chimney Creek		16.9	Poor	NT	Good	Collapsed stream banks
	Cow Canyon Creek	0.8	3.0	Poor	18	Good	Rilling
	Erskine Creek	0.1	1.1	Fair	4	Good	
	French Gulch Creek		1.8	Fair	282	Fair	Exposed soil, sheet erosion, gullying, collapsed banks
	Kern River, SF	0.8		Fair	NT	Fair	Gullying
	Long Valley Creek		5.5	Poor	NT	Fair to Good	Gullying and collapsed banks

Table 15 (cont.)

Stream	Miles on Public Land Perennial	Miles on Public Land Intermittent	Water Quality Rating 1)	Fecal Coliform Colonies/100ml	Stream Channel Stability Rating 2)	Types of Erosion
Pine Creek	0.7		Fair	NT	Fair	Gullying and exposed soil
Rockhouse Creek		2.5	Fair	NT	Good	
Sagebrush Creek		0.6	Fair	NT	Good	
South Lake Creek		1.0	Poor	2	Fair	Collapsed banks and gullying
Spanish Needle Creek	3.5		Poor	NT	Fair to Good	Collapsed banks
Spring Gulch		0.9	Fair	NT	Good	
Tillie Creek		1.25	Fair	13	Good	
Willow Gulch Creek		1.3	Fair	690	Good	

1) The Water Quality Rating was based on a comparison of physical, chemical, biological and bacteriological constituents with water quality standards and criteria. A "Good" rating indicates water quality is suitable for all uses. A "Fair" rating indicates water quality is suitable for all uses except domestic and recreational uses. A "Poor" rating indicates water quality which is also unsuitable for wildlife and livestock use.

2) The Stream Channel Stability Rating was based on average channel conditions and susceptability to future disturbance. A "Good" rating was given to channels that have been stable in the past and would probably remain stable in the future. A "Fair" rating was given to moderately unstable channels which are being disturbed by present management or could be disturbed by future management. A "Poor" rating was given to unstable channels that would remain unstable given a continuation of present practices.

3) EF = East Fork

4) NF = North Fork

5) SF = South Fork

6) NT = Not Tested

SOILS

The soils of the study area occur primarily in hilly and mountainous terrain which is partially dissected by very steep river canyons. Roughly seventy percent of the area has slopes between fifteen and seventy-five percent. Forty percent of the area is above fifty percent slope. Rock outcrops covering ten to twenty-five percent of the surface area are common. Some of the soils are very stony or very bouldery.

The soils fall into three broad categories: soils of valley floors, soils of the mountainous regions, and soils of the Sierra Nevada foothills. These can be further categorized into 21 associations. (See Table 16 for soil characteristics of each association) The soils of the valley floors occur in mountain valleys and generally support a valley grassland and foothill woodland plant community in the western portion of the area; a desert shrub and joshua tree plant community in the eastern portion; and a meadow plant community in some high mountain valleys. The soils of the mountainous regions generally support a pinyon-juniper plant community and smaller areas of a sagebrush scrub plant community. The soils of Sierra Nevada foothills supports a valley grassland plant community grading into a foothill woodland plant community at lower elevations, and a chaparral plant community grading into a pine savannah and yellow pine plant community at higher elevations.

Most of the soils of the area developed in parent materials derived from granitic and metasedimentary rocks. Depth to bedrock ranges from very shallow (less than 10 inches) to very deep (greater than 60 inches). Surface textures are dominantly coarse loamy sands or sandy loams. Soil reaction ranges from strongly acid to moderately alkaline.

Soils which have moderate natural fertility, are more than 20 inches deep, and have less than 10% rock outcrops, provide the best forage production. They are in soil associations 3,4,5,14,15, and 18. Soils which are very shallow and shallow, have low fertility, low available water capacity and/or have significant amounts of rock outcrop, are poor to fair producers of forage. These are in soil associations 2,6,7,8,9,10,11,12,13,16,17,19,20, and 21. For more detailed soils information, refer to the U.S Department of Agriculture, Soil Conservation Service's soil surveys for the following areas; Antelope Valley, California; Kern County, California (southeastern portion); and Tulare County, California (central portion). In addition, the uncorrelated and unpublished BLM Order 3 South Sierra Foothills soil survey addresses parts of Kern and Tulare counties, California. These soil survey reports are on file at the BLM Bakersfield District Office.

EROSION

Soil Surface Factors (SSF) were collected by the BLM soil-vegetation inventory team at 183 sites throughout the area in 1981. The results indicate that present erosion is not significant throughout the area.

	No. of Sites	Percentage Of Sites
Stable (SSF rating 0-20)	115	62.8
Slight erosion (SSF rating 21-40)	66	36.1
Moderate erosion (SSF rating 41-60)	2	1.1
	183	100.0

Stable is the major condition in the area, however, some critical erosion areas were identified. These are primarily gullies and headcuts in wet and dry meadows within the Chimney Peak area and in proximity to sloping unimproved dirt roads, where channelization of runoff has occured resulting in rill and gully development.

The water erosion hazard for most of the area is moderate to very high under bare soil conditions (water erosion hazards are rated under bare soil conditions). Soils with 5 to 15 percent slope range have a slight or moderate water erosion hazard rating, with a 15 to 50 percent slope range a moderate to high rating, and with a 50 to 75 percent slope range a high to very high rating. The variation within the slope ranges is due to other factors such as soil surface texture, rock fragment content, organic matter content, and clay minerology of the soil. For soil surface textures, clay loams are generally the least erodible followed by loams, clays, fine sandy loams, sandy loams, coarse sandy loams, loamy coarse sands and sands. The more rock fragments or organic matter in the soils, the less it is erodible. Soil association 3,4,5, and 18, (very shallow - less than 10 inches deep) and (shallow - 10 to 20 inches deep), cannot sustain the same amount of erosion that deeper soils can sustain without a significant decrease in plant productivity. These soils also have low available water capacities which can cause slow vegetative recovery. As a result, shallow soils are vulnerable to accelerated erosion for longer time periods than deeper soils. Shallow soils are major components in soil associations - 2,6,7,8,9,10,11,12,13,16,19,20, and 21.

Table 16 - Soil Associations

	Soil Association	Predominant Slope Range Percent	Parent Material	Depth to Bedrock (inches)	Typical Surface Textures	Water Erosion Hazard
Soils of the Valley Floor	1. Whitewolf*-Chollawell*-Thibau*	0-30	Mixed granitic alluvium	More than 60	Loamy course sands, gravelly loamy course sands.	Slight - moderate
	2. Southlake*-Abruptic Xerollic Durargids*	5-50	Mixed granitic alluvium	More than 60	Stony, cobbly, or very gravelly sandy loams	Slight - high
	3. Yorba*-Typic Xerorthents*	0-30	Mixed granitic alluvium	More than 60	Very bouldery or boulder coarse sandy loam, coarse sandy loam	Slight - moderate
	4. Toll*-Four Star*	0-15	Mixed granitic alluvium	More than 60	Loamy coarse sands, Sandy loams, cobbly sandy loams	Slight - moderate
	5. Steuber-Tehachapi-Havila	0-15	Mixed granitic alluvium	More than 60	Sandy loams	Slightly - moderate
Soils of the Mountainous Regions	6. Xyno*-Glenbrook-Rock outcrop	30-75	Granitic rock	Less than 20	Loamy coarse sands bouldery loamy coarse sands, very bouldery loamy coarse sands	High - very high
	7. Scodie*-Deadfoot*-Glenbrook	30-75	Granitic rock	Less than 20 -40	Bouldery or very bouldery loamy coarse sands	High - very high
	8. Kernville*-Haight*-Tweedy	15-75	Granitic rock	Less than 20 -40	Bouldery loamy coarse sands and sandy loams	High - very high
	9. Las Posas-Tweedy-Erskine*	15-75	Metamorphic igneous or sedimentary rocks	Less than 20 -40	Gravelly, very gravelly, cobbly, or stony loams and clays.	High - very high

*Tentative Soil Names/Classifications

Table 16 - (cont.)

	Soil Association	Predominant Slope Range Percent	Parent Material	Depth to Bedrock (inches)	Typical Surface Textures	Water Erosion Hazard
Soils of the Mountainous Regions (cont.)	10. Millerton-Erskine Variant*-Tweedy	30-75	Metamorphic igneous or sedimentary rocks	Less than 10 -40	Gravelly loams or gravelly clay loams	High - very high
	11. Stine*-Cyrus variant*	30-75	Granitic rock	Less than 10 -20	Gravelly sandy loams	High - very high
	12. Lithic Xeric Torriorthents-Lithic Haploxerolls*-Torriorthentic Haploxerolls*	5-75	Granitic rock Metamorphic igneous or sedimentary rocks	Less than 10 -40	Very gravelly loams, sandy loams, or gravelly loams	High - very high
	13. Tunnawee*-Lithic Haploxerolls, frigid*-Rubble land	15-50	Granitic rock	Less than 10-20	Loamy coarse sands, bouldery loamy coarse sands, and stony sandy loams	High
	14. Sheridan - Lebec	15-50	Granitic or Limestone rocks	20-40	Sandy loams or loams	High
	15. Walong-Anaverde-Edmundston	15-30	Granitic rock	20 - more than 40	Sandy loams	High
	16. Edmundston-Tollhouse-Goode	30-75	Granitic rock	Less than 20-60	Sandy loams	High
	17. Tweedy-Rockoutcrop-Edmundston	30-75	Granitic rock	20-60	Sandy loams or loams	High - very high
Soils of the Sierra Nevada Foothills	18. Blasingame-Auberry	5-50	Granitic rock	20-60	Sandy loams	Moderate - high
	19. Cieneba-Vista	9-75	Granitic rock	Less than 20-40	Coarse sandy loams	High - very high

*Tentative Soil Names/Classification

Table 16 - (cont.)

	Soil Association	Predominant Slope Range Percent	Parent Material	Depth to Bedrock (inches)	Typical Surface Textures	Water Erosion Hazard
Soils of the Sierra Nevada Foothills	20. Friant-Coarsegold	15-75	Metamorphic or sedimentary rock	Less than 20-40	Fine sandy loams or loams	High - very high
	21. Holland-Crouch-Sheephead	15-75	Granitic rock	Less than 20 - more than 60	Loams or coarse sandy loams	High - very high

SOCIO-ECONOMICS

The South Sierra Foothills EIS area includes parts of Tulare and Kern Counties. In 1980, Tulare county had a population of 245,738 people and Kern county had a population of 403,089 people. Both counties contain very large agricultural sectors based on cultivation of irrigated cropland. The dependence of the livestock operators on the 49 South Sierra Foothills allotments has been rated as High, Medium, or Low, - based upon the percentage of land within that allotment which is public land, and share of the operator's total forage needs supplied by the allotment. Table 17 displays operator dependency on allotments in each management category.

Table 17

Operator Allotment Dependency

Category I	(9 allotments) - 93% High - 7% Moderate
Category M	(14 allotments) - 56% High - 25% Moderate - 19% Low
Category C	(26 allotments) - 12% High - 23% Moderate - 65% Low

Actual use by livestock has been less than the active preference. The estimated actual use of 8,923 AUM's is the equivalent of sufficient feed to carry 744 cattle for one year. Table 18 displays the active preference and the estimated actual use by management category.

Table 18

Estimated Livestock Use (AUM's)

Allotment Category	Preference	Estimated Actual Use
I	8,049	4,831
M	2,764	2,594
C	3,486	1,498
Total	14,299	8,923

In the study area, one of the costs of using an allotment is that of maintenance. Improvements such as most fences and water sources are maintained by the livestock operators. Improvements on public land are subject to vandalism such as the cutting of fences and the shooting of water tanks. Repairing this damage is in some cases a significant extra cost to the livestock operator.

RECREATION

The study area primarily represents a semi-primitive, open space recreation resource, which includes excellent scenic, geologic, vegetation, wildlife, and historical values.

Recreation data were obtained from the South Sierra Foothills Inventory Summary Report. These data resulted from Recreation Opportunity Spectrum (ROS) evaluations, visitor use estimates, and field observations and interactions by professional staff personnel.

Recreation issue areas have been identified and recommended through the Bureau's planning system, as Special Recreation Management Areas (SRMAs). SRMAs are identified where congressionally recognized recreation values exist or where significant public recreation issues or management concerns occur. Five such SRMAs are located within the study area. They are the North Fork of the Kaweah River, the Keysville/Lower Kern River area, Case Mountain, Chimney Peak, and the Pacific Crest National Scenic Trail corridor. Other federally administered lands that border the study area include the BLM California Desert Conservation Area, Sequoia National Forest, Sequoia National Park and Lake Isabella (U.S. Army Corps of Engineers).

Most recreational use of the public lands in the study area occurs during the spring, summer and fall. Visitor registers and field contacts indicate the majority of visitors originate from the southern California area. Recreationists from other areas also travel to the study area to pursue activities such as hunting, whitewater rafting, pinyon nut collecting, etc..

Recreation Activities and Uses on Public Lands

In past years, public lands in the study area has grown in popularity due to its primitive, open-space recreation opportunities and values. Recreation activities related to grazing issues are discussed below.

Hunting, generally for deer and small upland game, is one of the most widespread recreational pursuits in the study area. Fishing is a seasonal on-going activity that is quite popular in portions of the North Fork Kaweah, South Fork Kern and Lower Kern Rivers. Dispersed camping activity along rivers and in meadow areas is associated with hunting and fishing use occuring in the study area. Commercial and non-commercial whitewater rafting and gold panning is increasing on the Lower Kern River. Swimming and picnicking is popular along the North Fork of the Kaweah River. Backpacking and hiking are popular on the Pacific Crest Trail and are expected to increase dramatically when all portions of the trail are completed.

The recreation activities listed above are directly related to grazing activities in the study area. Additional recreation uses in the study area include general sightseeing, dispersed camping and two semi-developed campgrounds, nature study, pinyon nut collecting, off-road vehicle recreation, horseback riding, snow play activities, and other recreational activities.

VEGETATION

The information used in describing the vegetation contained in the study area was gathered through three vegetation inventories: the Cholla Canyon Range Survey of 1968, the Rudnick Range Survey of 1971, and the South Sierra Foothills Vegetation Inventory of 1981. The former two were done in the spring; the latter was done in the summer.

An extremely complicated mosaic of vegetation stratifications was delineated. Some 12 plant communities, each with from 1 to 16 plant subcommunities, were noted. Due to the mixing of plant subcommunities, the study area represents a major ecotone between Valley Grassland, Sierran, and Desert vegetational elements. A total of 351 species of plants were identified by the South Sierra Foothills Inventory. The two earlier range surveys concentrated on plants which are important to livestock, therefore, not all species seen were recorded.

Table 19 shows the plant communities and subcommunities, Table 20 gives a brief description of the communities, and Table 21 identifies the Sensitive Plant Species (USFWS, threatened and endangered, State listed and proposed rare and endangered, and USFWS candidates) within the study area.

Table 19

Plant Communities and Subcommunities
of the South Sierra Foothills Study Area

Plant Community	Plant Subcommunity
Yellow Pine Forest	Ponderosa Pine/Black Oak
Foothill Woodland	Broadleaf Forest
	Broadleaf Forest/Chaparral
	Oak Savannah
	Oak Savannah/Digger Pine
	Digger Pine/Scrub Oak/Annual
	Oak Savannah/Digger Pine/Brush
	Digger Pine Savannah
	Digger Pine Savannah/Brush
	Oak Savannah/Brush
Chaparral	Chamise
	Chamise/Manzanita
	Chamise/Buckbrush
	Scrub Oak
	Scrub Oak/Manzanita
	Buckbrush
	Other Chaparral
	Seeding (formerly Chaparral)
	Scrub Oak/Buckbrush
	Mountain Mahogany
	Chaparral/Broadleaf Forest
	Manzanita/Buckbrush
	Other Chaparral/Digger Pine
	Scrub Oak/Silk Tassel
Valley Grassland	Annual Herbs
	Buckwheat/Annual Grasses
	Annual Herbs/Rubber Rabbitbrush
	Annual Herbs/Scrub Oak
Pinyon - Juniper	Pinyon Pine/Pine Bluegrass
	Chaining (formerly Pinyon Pine)
	Pinyon Pine
	Pinyon Pine/Big Sagebrush
	Pinyon Pine/Big Sagebrush/Bitterbrush
	Piute Cypress
	California Juniper/Yucca
	Buckwheat
	Pinyon Pine/Desert Needlegrass
	Pinyon Pine/Western Juniper
	Pinyon Pine/other Shrub
Desert Shrub	Encelia/Annual
	Scalebroom/Rubber Rabbitbrush
Meadow	Wet Meadow
	Dry Meadow

Table 19 (cont.)

Plant Community	Plant Subcommunity
Sagebrush Scrub	Big Sagebrush
	Rubber Rabbitbrush
	Big Sagebrush/Buckwheat
	Big Sagebrush/Bitterbrush
	Big Sagebrush/Rubber Rabbitbrush/Bitterbrush
	Big Sagebrush/Desert Sage/Rubber Rabbitbrush
Desert Grassland	Desert Needlegrass/Brush
Pine Savannah	Jeffery Pine/Brush
Joshua Tree Woodland	Joshua Tree/Sagebrush
	Joshua Tree/Annual Herbs
Riparian	Various

Table 20

A Brief Description of the Plant Communities
of the South Sierra Foothills Study Area

Community	Number of Subcommunities on the Study Area	Elevation Range	Location	Percent of Study Area	Major Plant Species	Remarks
Yellow Pine Forest	1	5,000 to 7,000 ft.	At the higher elevations of P.L. in the Wagy Flat and Havilah areas. Cismontane	Less than one	Ponderosa Pine Black Oak Brewer's Oak Mountain Mahogany Miner's Lettuce Bedstraw	Usually immediately adjacent to the Forest Service boundary.
Foothill Woodland	9	1,000 to 5,000 ft.	On the western slopes of the Sierra Nevada, around the western side of Lake Isabella and the Tehachapi area at intermediate elevations. Cismontane.	30	Blue Oak Digger Pine Dwarf Interior Live Oak Scrub Oak Buckbrush Mountain Mahogany Red Brome Annual Fescue Wild Oats Filaree	Very important forage producing area. Often on very steep slopes. Sometimes very brushy or mixed with Chaparral. On deeper, more developed soils than Chaparral.
Chaparral	16	1,000 to 5,000 ft.	The same areas as the Foothill Woodland. Cismontane.	28	Chamise Buckbrush Dwarf Interior Live Oak Scrub Oak Yerba Santa Silk Tassel Flannel Bush Eastwood Manzanita Our Lord's Candle Whitethorn Mountain Mahogany Common Manzanita	Very variable as to aspect and elevation . Chamise will dominate on dry sites, while Oak will dominate on wetter sites. The intermediate sites have a large variety on species. Usually is too thick to be grazed and therefore is unsuitable or potentially suitable for grazing.

Table 20 (cont.)

Community	Number of Subcommunities on the Study Area	Elevation Range	Location	Percent of Study Area	Major Plant Species	Remarks
Valley Grassland	4	700 to 3,000 ft.	San Joaquin Valley, eastern edge of Lake Isabella, in valleys south to Tehachapi. Cismontane.	1	Red Brome Foxtail Fescue Annual Fescue Soft Chess Wild Oats Filaree Saltbush	Mostly on private land. Grades into the Desert Shrub east of Lake Isabella.
Pinyon-Juniper	10	4,500 to 8,000 ft.	Walker Pass, Chimney Peak area. Transmontane.	27	Pinyon Pine Western Juniper Antelope Bitterbrush Desert Bitterbrush Rubber Rabbitbrush Big Sagebrush Pine Bluegrass Desert Needlegrass	Very rugged country, only a small portion of which is suitable for grazing. The pine often forms a closed canopy which excludes understory of grazable plants.
Desert Shrub	4	2,500 to 4,500 ft.	East of Lake Isabella to Canebreak and Kelso Valleys. Transmontane.	10	Cheesebush Rabbitbrush Encelia Scalebroom Desert Sage Pigmy Cedar Red Brome Arabian Grass Filaree	Annual grasses and forbs provide the bulk of the livestock forage. This is a Mojave Desert Community.
Meadow	2	2,500 to 6,500 ft.	Chimney Peak area, along the South Fork of the Kern River.	Less than one	Sedge Rush Bluejoint Wildrye Sagebrush Rubber Rabbitbrush	Mostly on private land. Often head cutting is converting wet meadow to dry meadow or Pinyon Pine Forest.

Table 20 (cont.)

Community	Number of Subcommunities on the Study Area	Elevation Range	Location	Percent of Study Area	Major Plant Species	Remarks
Sagebrush Scrub	5	4,500 to 6,500 ft.	Walker Pass-Chimney Peak area Transmontane to Montane.	2	Big Sagebrush Rubber Rabbitbrush California Buckwheat Antelope Bitterbrush Desert Bitterbrush Desert Needlegrass Pine Bluegrass	This community is often being invaded by Pinyon Pine. Sometimes meadows are being degraded to Sagebrush areas.
Desert Grassland	1	4,500 to 6,500 ft.	Chimney Peak area, Kelso Valley. Transmontane.	Less than one	Desert Needlegrass Pine Bluegrass Pinyon Pine Big Sagebrush California Buckwheat	Relict areas. Little or no grazing.
Pine Savannah	1	7,800 ft.	Chimney Peak area. Transmontane	Less than one	Jeffery Pine Desert Bitterbrush Rabbitbrush Gooseberry	Relict Area. Little or no grazing.
Joshua Tree Woodland	2	3,500 to 4,500 ft.	Canebreak Valley, Kelso valley.	2	Joshua Tree Big Sagebrush Cheesebush California Buckwheat Horsebush Mormon Tea Red Brome	Annual grass comprises the bulk of the forage.
Riparian	Not Studied	700 to 7,000 ft.	Along streams in the total study area.	Less than one	Willow Cottonwood Mulefat Rabbit's foot grass Bluejoint Wildrye	Not inventoried because of its relatively small size. Important to wildlife.

Table 21

Sensitive Plant Species - South Sierra Foothills Study Area

	Species Name	Legal Status DFG R	DFG E	USFWS 1	USFWS 2	Distribution & Occurance: Actually Found On PL	Distribution & Occurance: Potential of Being Found On PL	Habitat
*	Astragalus subvestitus Kern County Milkvetch	-	-	1		Yes		Yellow Pine Forest and Pinyon-Juniper Woodland
	Brodiaea insignis Kaweah Brodiaea		E	1		No	High	Valley Grassland
*	Calochortus striatus Alkali Mariposa Lily	-	-	-	2	No	High	Alkali Meadow (dry meadow)
	Chamaesyce hooveri Hoover's Spurge	-	-	1		No	Medium	Valley Grassland
	Clarkia calientensis Vasek's Clarkia	-	-	-	2	No	Medium	Valley Grassland
*	Cupressus nevadensis Piute Cypress	-	-	-	2	Yes		Pinyon-Juniper Woodland
	Delphinium inopinum Dwarf Larkspur	-	-	-	2	No	Medium	Yellow Pine Forest
**	Dudleya calcicola Limestone Dudleya	-	-		?	Yes		Foothill Woodland
**	Eriogonum gossypinum Cottony Buckwheat	-	-	1		No	High	Valley Grassland
	Eriogonum nudum var. murinum Mouse Buckwheat	-	-	1		No	Medium	Yellow Pine Forest
	Eschscholtzia procera Kernville Poppy	-	-	1		No	High	Pinyon-Juniper Woodland
*	Fritillaria brandegei Greenhorn Fritillary	-	-	-	2	Yes		Yellow Pine Forest

Table 21 (cont.)

Species Name	Legal Status DFG R	DFG E	USFWS 1	USFWS 2	Distribution & Occurance: Actually Found ON PL	Distribution & Occurance: Potential of Being Found On PL	Habitat
Fritllaria striata Adobe Lily	-	-	1		Yes		Valley Grassland
Mimulus pictus Calico Monkey Flower	-	-	1		Yes		Foothill Woodland
Navarretia setiloba Covilles's Navarretia	-	-	1		No	High	Foothill Woodland
Opuntia basilaris var. treleasei Bakersfield Beavertail Cactus	-	-	1		No	High	Valley Grassland
Phacelia novenmillensis Nine Mile Canyon Phacelia	-	-	1		Yes		Pinyon-Juniper Woodland
Pseudobahia peirsonii Tulare Pseudobahia	-	-	1		Yes		Valley Grassland
Streptanthus cordatus var. piutensis Piute Jewel Flower	-	-	1		Yes		Pinyon-Juniper Woodland

LEGEND

PL: Public Land

DFG: California Department of Fish and Game. Listed Species
R = rare
E = endangered

USFWS: United States Fish and Wildlife Service. Notice of Review - candidate species.

Category 1: Taxa for which the service presently has sufficient information on hand to support the biological appropriateness of their being listed as endangered or threatened.

Category 2: Taxa for which information now in possession of the service indicates the probable appropriateness of listing as endangered or threatened, but for which sufficient information is not presently available to biologically support a proposed rule.

* Taxa proposed by USFWS to be removed from the list of candidates currently under review (delisted); yet to be approved or published in the Federal Register.

** Taxa proposed by USFWS to be added to the list of candidates currently under review; not yet approved or published in the Federal Register.

Note: The following are additional sensitive plant species of very low potential on public land within the study area; SIKE, Sidalcea keckii; ERBRB, Eriogonum breedlovei var. breedlovei; NETW, Nemacladus twisselmanii; LALE, Layia leucopappa.

CULTURAL RESOURCES

The available data base for cultural resources on BLM-administered public lands within the South Sierra Foothills planning area includes a Class I (existing data) inventory of recorded prehistoric, historic, and ethnographic sites, including preliminary models for estimating site locations (Theodoratus Cultural Research, Inc. et al., 1982 [draft]); a Class II (field sampling) inventory of the nine I Category grazing allotments; three major archaeological excavating projects along portions of the Pacific Crest Trail (Garfinkel, Schiffman, and McGuire 1979; McGuire and Garfinkel 1980; and Ambro et al. 1981); a management proposal for a site listed on the National Register of Historic Places (NRHP) (Salzman 1977); and various project-specific inventories conducted by BLM archaeologists since 1973. In addition, numerous projects undertaken by researchers and consultants under contract with Federal agencies have contributed to the cultural resource data base of the planning area since the 1930's (e.g., Voegelin 1938; and Schiffman 1976).

Within the planning area, at least 605 archaeological sites have been officially recorded.* Of that total, 394 sites are on private lands, 139 sites are on BLM-administered public land, and 72+ sites are on lands administered by the U.S. Forest Service.* There are 106 sites on I and M Category grazing allotments. No sites specifically used by Native Americans were identified during the inventories; Native American sites and concerns will be solicited during the project development phase before the implementation of EIS decisions.

One site on BLM-administered lands within the EIS study area is listed on the NRHP: Ker-311. National Register eligibility determinations have not been completed for all recorded sites on BLM public lands in the EIS area, however, at least 45 sites on grazing allotments appear to meet eligibility criteria: 32 sites were identified during surveys of proposed routes for the Pacific Crest Trail, 12 sites were located during the Class II inventory, and the remaining site was identified during a project - specific inventory. Final National Register eligibility determinations for all recorded sites on BLM lands in the EIS study area will be completed prior to any surface disturbing activities associated with rangeland improvements.

The size of the South Sierra Foothills rangeland EIS study area (198,113 acres) prevented a comprehensive inventory to identify and evaluate all prehistoric, historic, and ethnographic sites that may be eligible for inclusion on the NRHP within funding and personnel constraints. Therefore, a modified Class II inventory strategy was developed in consultation with the State Historic Preservation Officer (SHPO), pursuant to Stipulation No. 1 of the Rangeland Programmatic Memorandum of Agreement (RPMOA) between the Advisory Council on Historic Preservation (ACHP), BLM, and the National Conference of SHPO's (1980). Research questions were proposed which could

*The number of identified sites is continually increasing as new surveys are completed. The total number of sites recorded on U.S. Forest Service lands was not obtained.

be addressed through systematic inventory of at least 1.46 percent (2000 acres) of those grazing allotments most likely to be subject to future range improvement projects (i.e., the I Category allotments). Judgemental reconnaissance and inventory data obtained from previous cultural resource investigations supplemented the Class II inventory data to assist archaeologists in estimating the number, distribution, and clustering of cultural resource sites within the planning area and, specifically, within the EIS grazing allotments; such data are then used to identify known and potential impacts of the Proposed Action and four Alternatives for the EIS.

The Class II inventory resulted in the identification of 20 previously unrecorded archaeological sites. Fifty-two 40-acre quadrats were selected, two of which constituted judgmental reconnaissance, representing 1.2-3.8 percent of each of the nine I Category allotments. The 2080 acres inventoried represents an average of 1.05 percent of all public lands within grazing allotments in the EIS area, or 1.46 percent of the total I Category acreage. Fourteen out of the 20 sites are within the Walker Pass Common allotment (0077), which has easily the highest overall potential for cultural resource occurrences; the other 6 sites are within 4 of the remaining 8 I Category allotments.

Due to the varied characteristics of the geographic setting of the EIS land base, and the limitations of the inventory data (past and present), a statistically valid estimate of the total number of sites in the study area or their density and distribution is not presently possible. However, when the site locations from the Class II inventory results are overlaid on A.W. Kuchler's 1:1,000,000 scale map entitled, "Natural Vegetation of California" (1977), a basic site distribution pattern emerges among Kuchler's 3 primary vegetation communities inventoried in the EIS study area: the greatest number of sites and, hence, the community with the highest potential for site occurrences, appears to be the "Juniper-Pinyon Woodland," with less potential in the "Blue Oak-Digger Pine Forest" community, and the least potential within the "California Prairie" vegetation community. Proximity to water, natural transportation corridors such a mountain passes, subsistence resources, and relatively level terrain for village site locations are all factors influencing the location of most prehistoric and ethnographic sites in the study area. Historic sites were primarily situated near transportation corridors and economic resources (e.g., mineral deposits, grazing lands, and forests).

Specific information regarding site locations and specific areas of cultural resources sensitivity is considered confidential and is withheld from this document for protection of the resources.

Native American Concerns

Consultation with appropriate Native American groups and individuals will be undertaken on a project-specific basis pursuant to the "Memorandum of Understanding Pertaining to Bureau of Land Management, California, Policy for Native American Concerns and Cultural Resource Management Among the

Native American Heritage Commission and the State Historic Preservation Officer and the Bureau of Land Management, California" (1980). Additionally, comments will be solicited from the Native American community and the Native American Heritage Commission as an aspect of the Draft EIS review process. Such consultation and review will be directed toward identification of traditional heritage values.

WILDERNESS

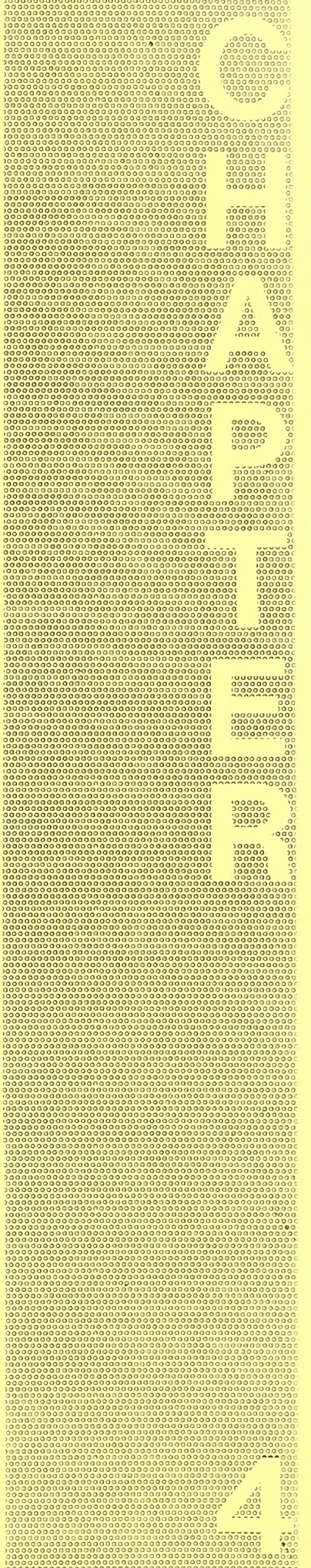
The Wilderness Study Areas (WSA's) listed below are located within the EIS area and are currently being managed to protect their wilderness values in accordance with the Bureau's Interim Management Policy and Guidelines for Lands Under Wilderness Review (IMP - December 12, 1979) until Congress makes a final wilderness decision on each. Maps and a full description of each area can be found in the Final Intensive Wilderness Inventory of Public Lands Administered by BLM California Outside the California Desert Conservation Area (December, 1979).

Owens Peak WSA CA-010-026 23,560 acres.
This unit is addressed in the BLM Central California Wilderness EIS.

Sacatar Meadows WSA CA-010-027 18,175 acres.
This unit is undergoing analysis in the Benton-Owens Valley/Bodie Coleville Wilderness EIS.

Rockhouse WSA CA-010-029 34,655 acres.
This unit will be addressed in the Sequoia National Forest Plan EIS in accordance with the USFS/BLM Joint Wilderness Study Agreement.

Piute-Cypress WSA CA-010-046 5,527 Acres (3,578 BLM, 1,949 USFS)
This unit is addressed in the BLM Central California Wilderness EIS.



ENVIRONMENTAL CONSEQUENCES

CHAPTER 4

CHAPTER 4 - ENVIRONMENTAL CONSEQUENCES

INTRODUCTION

This chapter provides . . .

1. Scientific analysis of the proposed action and four alternatives.
2. Recommended mitigating measures developed in response to identified issues.
3. Unavoidable adverse impacts which cannot be mitigated.

The analysis of alternatives is organized by issue and non-issue related impacts . . .

Issue Related Impacts:

1. Impact of Grazing on Wildlife (includes Rare, Threatened and Endangered Species).
2. Impact of Grazing on Water Quality and Watershed Protection.
3. Economic Impacts of Grazing Management.
4. Impact of Grazing on Recreation.

Non-Issue Related Impacts:

1. Vegetation (includes Rare, Threatened and Endangered Species)
2. Cultural Resources
3. Wilderness

Based on the following assumptions:

1. Near-normal annual precipitation.
2. Funds and personnel available for implementation.
3. Impacts will be monitored and adjusted as necessary.
4. Minor adjustments in management may occur.
5. Short-term refers to five years, long-term to twenty years.
6. Baseline data are accurate.

ISSUE 1: IMPACT OF GRAZING ON WILDLIFE

WILDLIFE
(Includes Rare, Threatened, and Endangered Species)

In order to address the wildlife issue in the most efficient and consistent manner, the following two tables have been developed: Table 22 relates the impacts to wildlife on I Category allotments by the five alternatives, and Table 23 relates the impacts to wildlife on M and C Category allotments by the five alternatives - where on those allotments specific issues have been identified.

Table 22

Impacts to Wildlife - I Category Allotments

I Category Allotments	Alt. 1 Proposed Action	Alt. 2 Livestock Maximization	Alt. 3 Resource Protection	Alt. 4 Balanced Use	Alt. 5 No Grazing
		Issue: Migratory Deer Habitat			
0077 Walker Pass Common	Approximately 1 acre of habitat would be impacted by fence construction posing a minor impediment to deer migration. A low level of deer mortality may occur (Wildlife Society, 1980)	11 miles of fence (11 acres) near the Walker Pass migration route would cause some deer mortality (Wildlife Society 1980). 3,000 acres of vegetation manipulation would reduce deer cover in the short term. However, removal of decadent brush would open new areas of habitat and improve forage quality in the long run provided the design included some leave areas and the project is not overgrazed.	Impacts from fencing similar to Alt. 1. Approximately 1,000 acres of deer habitat would be affected as described for Alt. 2.	Impacts similar to Alt. 2 except that only 2,000 acres would be affected by vegetation manipulation.	Food and cover for deer would increase rapidly in the short term due to lack of competition from cattle (Calif. Dept. of Fish and Game). In the long term, deer populations would increase to a level where overgrazing by deer would begin to limit the health and productivity of the herd.
		Issue: Resident Deer Habitat			
0017 North Fork River 0090 Wagy Flat Common	Impacts resulting from 1,480 acres of vegetation manipulation would be similar to those in the Walker Pass Common Allotment (0077) under Alt. 2.	Same as Alt. 1 except that additional fence (3 miles) in Wagy Flat would impact deer as in Walker Pass Common.	Deer use would not change significantly from current levels.	Same as Alt. 2.	Deer use would increase in the short term due to additional cover and spring feed. Long term effects would be the same as in the Walker Pass Common Allotment.

Table 22 (cont.)

I Category Allotments	Alt. 1 Proposed Action	Alt. 2 Livestock Maximization	Alt. 3 Resource Protection	Alt. 4 Balanced Use	Alt. 5 No Grazing
			Issue : Resident Deer Habitat (cont.)		
0086 Cholla Canyon	Continued grazing at 232 AUM's above the surveyed forage rating would confine resident deer to steep canyons. Numbers would remain static.	Deer use would decrease as additional cover and forage is removed by cattle.	Same as Alt. 1.	Impacts similar to Alt. 2, but at reduced intensity.	Same as North Fork River Allotment.
			Issue: Upland Game		
0017 North Fork River 0077 Walker Pass Common 0090 Wagy Flat Common 0117 Red Mountain	Upland game populations would likely be reduced by displacement for the first year or two following 2,280 acres of vegetation manipulation (BLM 1981). Populations would show a significant overall increase within 5 years following treatment especially in chaparral types.	Same as Alt. 1 except 5,280 acres of vegetation would be manipulated.	Impacts similar to Alt. 1 and 2 but to a lesser degree as only 1,700 acres would be affected.	Impacts similar to Alt. 1 and 2.	Increased grass around shrubs would improve nesting success and productivity until vegetation became rank or was set back by fire.

Table 22 (cont.)

I Category Allotments	Alt. 1 Proposed Action	Alt. 2 Livestock Maximization	Alt. 3 Resource Protection	Alt. 4 Balanced Use	Alt. 5 No Grazing
			Issue: Upland Game (cont.)		
0074 Freedom Hill Common 0078 Airport Common 0086 Cholla Canyon	Upland game populations would remain sparse or decline slightly due to continued livestock grazing 434 AUM's in excess of the surveyed forage rating.	Upland game populations would decline over present numbers.	Same as Alt. 1.	Same as Alt. 2.	Same as for North Fork River, Walker Pass Common, Wagy Flat Common, and Red Mountain allotments.
0017 North Fork River 0074 Freedom Hill Common 0077 Walker Pass Common 0078 Airport Common 0082 Short Canyon 0086 Cholla Canyon 0090 Wagy Flat Common 0117 Red Mountain	Approximately 1 acre of upland habitat around guzzlers and adjacent to spring developments would be impacted (11 acres total) by increased livestock concentrations. This loss of cover would be offset by protecting the water source by fencing.	Same as Alt. 1.	The affect of 1 additional water development would be insignificant.	Same as Alt. 1.	Same as above.
			Issue : Non-game, Other Than Endangered		
All Category I Allotments	Non-game food and cover would initially decline slightly for the first year or two following vegetation manipulation on 2,280	Impacts to non-game would be similar to Alt. 1 except that population declines in livestock concentration areas would be more wide	No change from current conditions, overall. The 1900 acres of vegetation manipulation would respond as in Alt. 1. One new water	Impacts similar to Alt. 1 except less intensive.	Species diversity and abundance would increase initially, especially around springs. Uncontrolled growth of vegetation around

Table 22 (cont.)

I Category Allotments	Alt. 1 Proposed Action	Alt. 2 Livestock Maximization	Alt. 3 Resource Protection	Alt. 4 Balanced Use	Alt. 5 No Grazing
		Issue : Non-game, Other Than Endangered (cont.)			
All Category I Allotments (cont.)	acres. In the long term, species diversity and abundance would increase in chaparral communities. Less cavity nesting would be available if pine areas are treated. A slight decline in non-game populations on upland sites adjacent to water developments (13 acres) would occur. Fenced spring developments would increase non-game use in the protected areas.	spread (20 sites) and effects of vegetation manipulation would occur of 6,080 acres.	development would have insignificant impacts.		springs would ultimately lead to the springs drying up, followed by a decline in use by non-game species.

Table 23

Impacts to Wildlife - M and C Category Allotments

M and C Category Allotments	Alt. 1 Proposed Action	Alt. 2 Livestock Maximization	Alt. 3 Resource Protection	Alt. 4 Balanced Resource Use	Alt. 5 No Grazing
			Issue: Mineral King Deer Herd		
0114 Case Mountain 0036 Horn Mountain 0104 Washburn Cove 0061 Oak Grove 0103 Milk Ranch Peak	Deer would generally decrease, especially on Milk Ranch Peak which would be grazed 100 AUM's in excess of surveyed AUM's.	Deer forage would be lacking.	More deer forage would be available; wintering deer population would be sustained. Deer loss during winter would be minimal.	Deer population on public land would continue at present levels, with additional forage on Milk Ranch Peak.	Deer use overall would increase in the short term. In the long term deer use would decline in areas of primarily chamise chaparral as the stands become decadent.
			Issue: Year Round Resident Deer Habitat		
0033 Mankins Creek 0075 Kelso Peak 0102 Burnt Pt. 0005 Blossum Peak 0024 Bear Creek	Deer population would decrease, especially on Kelso Creek which is grazed at 490 AUM's in excess of surveyed AUM's.	Deer forage would still be lacking.	Deer forage would increase and local populations would increase.	Deer forage would increase marginally and population would remain at present levels.	Overall deer forage and vegetation cover would increase. Population would likely increase, except on chaparral sites, where decadent chamise would ultimately result in lower deer numbers.
			Issue: Walker Pass Deer Herd		
0076 Sacatar Meadow 0120 Spanish Needle Creek	Deer forage and cover would be reduced due to grazing in excess of the forage rating.	Deer use would remain the same.	More forage and vegetation cover would be allowed to grow and deer would increase slowly.	Same as Alt. 2	Vegetation cover and forage would return and deer use would increase.
			Issue: Year Round Deer/Upland Game and Non-Game		
0087 Havilah Common	Wildlife would remain at lower population levels due to grazing in excess of forage rating.	Vegetation manipulation would eliminate many game and non-game species in the	Game species would increase, but non-game would remain about the same.	Game species would increase marginally and non-game would decrease temporarily in	Wildlife would likely become more diverse as plant species diversity increases.

Table 23 (cont.)

M and C Category Allotment	Alt. 1 Proposed Action	Alt. 2 Livestock Maximization	Alt. 3 Resource Protection	Alt. 4 Balanced Resource Use	Alt. 5 No Grazing
		Issue: Year Round Deer/Upland Game and Non-Game			
		short term. Game would re-establish after 1 to 2 years if the vegetation is not overgrazed. Long term diversity and abundance would be increased.		vegetation treatment areas.	This trend would level off and stabilize in 15-25 years. on sites that are not predominately chamise. Predominately chamise sites would have lower diversity.
		Issue: Upland Game			
0084 Cyrus Canyon 0085 Cooks Peak 0111 Sand Canyon (1) 0012 Live Oak Pass 0023 Rancheria Creek 0047 Rankin Ranch 0052 Thompson Ridge 0059 Loco Bill Canyon 0066 Wagonshed Creek 0081 Nellie's Nipple 0113 John's Peak 0119 Bald Eagle Peak	Upland game would generally decrease. Populations would fall on the following allotments which are grazed in excess of forage survey rating: Cyrus Canyon, Havilah Common, Sand Canyon, Rancheria Creek, Loco Bill Canyon, Nellies Nipple and Bald Eagle Peak.	Cover and forage would be reduced in most cases.	More cover and forage would be available. Upland game would likely increase slightly in time.	More cover would be available, except near livestock water developments.	Upland game populations would increase as habitat grew back to pre-livestock grazing levels.
		Issue: Non-Game, Other Than Endangered			
0094 Comb Rocks 0034 Comb Rocks 0095 Progress Gulch	Non-game diversity would remain low.	Same as Alt. 1.	Same as Alt. 1.	Same as Alt. 1.	Non-game diversity would increase as vegetation diversity increases.

Table 23 (cont.)

M and C Category Allotment	Alt. 1 Proposed Action	Alt. 2 Livestock Maximization	Alt. 3 Resource Protection	Alt. 4 Balanced Resource Use	Alt. 5 No Grazing
		Issue: Endangered Non-Game Species - San Joaquin Kit Fox			
0009 Badger Peak 0040 Rio Bravo 0056 Round Mountain Rd.	Populations would remain low due to lack of prey.	Same as Alt. 1.	Population might increase slightly if more cover for prey became available.	Same as Alt. 1.	Kit Fox population would increase and chances for recovery would be enhanced.
		Issue: Endangered Non-Game Species - California Condor			
0048 Mountain Creek 0071 Rancheria	Impacts unknown.	Same as Alt. 1.	Same as Alt. 1.	Same as Alt. 1.	Condor use might increase slightly due to less human disturbance on range.
		Issue: Endangered Non-Game Species - Kern Primrose Sphinx Moth			
0045 Goldpan Canyon	Affects on moth population unknown.	Same as Alt. 1.	Same as Alt. 1.	Same as Alt. 1.	Recovery potential unknown.
		Issue: Endangered Non-Game Species - Tehachapi Slender Salamander			
0049 Sand Canyon (2)	Vegetation cover would be reduced near stream, causing loss of habitat.	Vegetation cover would be reduced near stream, as area would be grazed in excess of forage survey rating.	Vegetation cover near stream would still be lacking due to cattle trampling.	Same as Alt. 3.	Vegetation cover would return. Salamander population might recover.

Issue 2: IMPACT OF GRAZING UPON WATER QUALITY AND WATERSHED PROTECTION

WATER RESOURCES

Forage Allocation

Continuing present management would have an adverse effect on water resources in some allotments. Livestock congregate near streams and springs because they prefer the shade, lusher vegetation and readily available drinking water that these areas provide (Armour 1977). This alters water quality by increasing water temperatures, total dissolved solids, bacteria and suspended sediment and by altering the timing and volume of water flow (Platts 1979). Gullying of stream channels and collapsing of stream banks would continue in allotments 0045, 0049, 0051, 0074, 0090, 0118, and 0120. Impacts on water quality and channel stability would increase when additional grazing occurs during years of high forage production.

Range Improvements

Development of springs increases the amount of water available for livestock use and can ease grazing pressures on streams by luring cattle away from them. However, congregation of livestock around spring developments can adversely impact streams if the developments are to close to streams. In addition, the congregation of livestock at the site of spring developments can cause erosion and water quality problems if the spring sources are not protected.

Livestock tend to trail along fencelines. Therefore, fences that cross streams would result in greater livestock concentrations and associated disturbance at these points.

The effects of vegetation manipulation on water resources would be negligible if all project design guidelines and mitigating measures are followed. Vegetation manipulation can result in a short term increase in water yield in the immediate area, due to a temporary reduction in transpiring biomass. The excess water becomes available to augment stream flow.

Proposed guzzlers and cattleguards would have a negligible effect on water resources.

SOILS

Most of the allotments are not being adversely impacted by livestock grazing except for areas surrounding livestock watering facilities. In these areas, sheet erosion and soil compaction are occuring from livestock trampling and vegetation removal.

Allotment 0086 Cholla Canyon is heavily impacted around the livestock watering facilities and along the canyon floor with little or no vegetation left to protect the soil resource. Heavy livestock use in the area has also

resulted in rill and gully formation on or near existing sloping unimproved dirt roads and livestock trails located within the allotment.
The range improvements proposed in this alternative would have localized impacts near each project site. These impacts are expected to be mainly some sheet erosion and soil compaction from livestock trampling which results in reduced vegetative protective cover for the soil resource from water erosion.

The vegetation manipulation projects would increase impacts to the soil resources. Prescribed burning projects, in removing the vegetation cover, will expose the soil to possible increased erosion. Heavy fall rains would then tend to remove the unprotected soil. An additional problem associated with fire is that it changes the physical properties of the soil to form a water repellent layer on or below the soil surface. This effect is especially evident during the first year after a fire and tends to diminish during succeeding years. Coarse textured soils, which comprise the vast majority of the study area, are especially affected by this problem. On moderate to steep slopes, the removal of the vegetation cover combined with the effects of water repellency would place the erosion risk in a high to very high category. This risk decreases significantly if an early fall rain germinates a large number of annuals prior to heavy winter rains.

Soils supporting chaparral vegetation, in the study area, would generally be affected positively by prescribed burns. In this instance, fire would act as the principal method for releasing nutrients from vegetation and making them available to growing plants.

Issue 3: ECONOMIC IMPACTS OF GRAZING MANAGEMENT

SOCIO-ECONOMICS

This alternative would continue the existing level of livestock use. There would be a possibility of some increase in livestock use as a result of installation of improvements, though the amount has not been quantified. The operators' cost of maintenance would be increased due to the additional improvements.

Issue 4: IMPACT OF GRAZING UPON RECREATION

Hunting and Fishing Opportunities

Some hunting and fishing experiences would deteriorate under this alternative.

Whitewater Rafting Opportunities

Cattle activity along the northern bank of the Lower Kern River would continue to be a minor impact on commercial and non-commercial whitewater operations.

Swimming and Picnicking Opportunities

Day use swimming and picnicking along the North Fork of the Kaweah River and the Lower Kern River would continue to receive low to moderate impact from grazing.

Backpacking and Hiking Opportunities

Portions of the Pacific Crest Trail that cross the study area would continue to experience low to moderate impact from grazing activities.

NON-ISSUE RELATED IMPACTS

VEGETATION

As relates to vegetation manipulation for this alternative, prescribed burning of chaparral would set secondary plant succession in motion. The burned areas would first revegetate with annual forbs, followed by annual grasses. At this stage forage production would increase for both livestock and wildlife. In addition, several burned brush species would begin to sprout from their roots and start vigorous regrowth. Seed germination by other brush species would be promoted by the effects of the burn. Eventually a thick mantel of climax chaparral would return. The herbaceous species involved in plant succession and the speed at which the brush would return depends on precipitation, soil, insolation, and temperature (Sweeney 1956, Sampson and Jesperson 1963, Hanes 1971, Menke and Villasenor, 1977).

Development of additional water sources would improve livestock distribution. Heretofore ungrazed areas would be grazed, thus relieving grazing pressure on areas that formerly were in closer proximity to water. "Sore spots", denuded areas in close proximity to water sources, would result, but overall the vegetation species that are desirable to livestock and competitive forage species would benefit. The species would increase in both size and vigor.

The development of fences would benefit vegetation by improving livestock distribution and control.

Some of the allotments are overobligated by present forage allocations. This causes overgrazing, which results in damage to perennial plants. Heavy grazing on annual ranges with more than 15 inches of precipitation will result in plants of low stature such as filaree and nitgrass, and thus less production. Heavy grazing on annual ranges with less than 15 inches of precipitation does not affect production. (Bartolome et. al. 1980).

R T and E Plants

Kaweah Area (Refer to Map 2a contained in Chapter 2, "Affected Environment".)

There are several major causes of impact within this map area, due to the rarity of species involved. Four USFWS candidate species have been identified - all very rare and two seriously endangered throughout their range. These are BRIN, *Brodiaea insignis* and CLSP, *Clarkia springvillensis*.

The other very rare species are ERNUM, Eriogonum nudum var. murinum and PSPE, Pseudobahia peirsonii.

Potential impacts are as follows;

1. Grazing classifications may have a serious impact due to the funding constraints on M and C Category allotments. Greater protection would be afforded these candidate species if they are under the I Category, intensive grazing management. ERNUM is in the C Category for allotments 0061, and 0103 and in the M Category for allotment 0094. BRIN habitat is found in the C Category for allotment 0005, and in the M Category for allotments 0014, 0094 and 0104.

2. High potential impacts exist from range improvements in the habitat for BRIN and ERNUM on allotments 0033, 0094, 0014, and 0104.

3. Season of use would cause serious impact to the reproductive ability of the above mentioned species if they are palatable to livestock.

4. Assignment of AUM's on M & C allotments with sensitive species habitat based on a lack of range survey data may result in a continued impact on sensitive species survival.

Isabella Area (Refer to Map 2b contained in Chapter 2, "Affected Environment".)

Species identified and impacts are similar to those identified for the Kaweah area.

Potential impacts are as follows;

1. Grazing classifications - species located in M and C Category allotments would be afforded better protection under the I Category classification. Allotments identified; 0079, 0089, 0119, 0048, and 0009.

2. Vegetation manipulation is extensive in some sensitive species habitat and may alter or destroy plants as well as habitat temporarily or permanently. Allotments indentified; 0090, 0070, and 0118.

Tehachapi Area (Refer to Map 2c contained in Chapter 2, "Affected Environment".)

No currently known conflicts for sensitive species sites exist in this area, however very little inventory has been done by either BLM or non-Bureau personnel. Within this area there is the potential habitat for the following species:

NASE - Navarretia setiloba
MIMI - Mimulus pictus
ESPR - Eschscholtzia procera
LALE - Layia leucopappa

At the present level of information the most endangered species with the highest potential on public lands and the most likely to be impacted is NASE.

CULTURAL RESOURCES

This analysis is limited to a general discussion of anticipated impacts in those allotments in which range-related actions are proposed (I and M Category allotments).

Based on limited cultural resources inventory data, it is assumed that most of the cultural resource sites within grazing allotments in the EIS area have been accessible to livestock use in the past and have sustained an unquantified level of impacts. Given natural factors, such as forage, water availability, steepness of terrain, and range management practices, as well as the gregarious nature of livestock, it is clear that livestock use of the public lands is not evenly distributed. It is assumed that the potential impacts of livestock use on cultural resources are distributed proportionally to the distribution of livestock; it is also assumed that potential impacts to cultural resources are proportional to animal stocking rates. The impact of livestock on cultural resources tends to be cumulative.

Livestock concentrations in range improvement areas result in trampling and trampling-related erosion. Livestock rubbing against standing historic structures and livestock concentrations at prehistoric cultural resource sites may result in the deterioration of standing structures and features, breakage of surface artifacts, vertical and horizontal mixing of midden constituents, and subtle changes in the depositional matrices of subsurface sites (e.g., pollen count, carbon contamination, and pH level).

Loss of cultural resources data is irretrievable and irreplaceable, having a long-term adverse effect. What data are destroyed or significantly disturbed presents a loss of knowledge about a particular cultural resource site.

Under Alternative 1, one mile of fence is proposed; no recorded cultural resource sites are located along the proposed fence line. Twenty-five spring developments are proposed under this alternative. Since prehistoric cultural resource sites are frequently associated with natural water sources, particularly in the Juniper-Pinyon Woodland vegetation community, there is a high potential for sites at springs with a corresponding high potential for adverse impacts from spring development; there are however, no recorded cultural resources sites near the proposed spring developments. Six guzzlers are proposed; no recorded cultural resource sites occur at those locations. No recorded sites are known to be located where the 3

cattle guards are proposed. Alternative 1 proposes 5610 acres for vegetation manipulation. Two recorded cultural resource sites may be affected by controlled burning or selective cutting; 1 site does not appear to meet the National Register of Historic Places (NRHP) eligibility criteria and no NRHP evaluation has been made regarding the other site.

WILDERNESS

See Table 24 which starts on the next page.

Table 24

Proposed Rangeland Improvements and Their Impacts to Wilderness Study Areas (WSA's) in the EIS Study Area

Major Actions	Alt. 1 Proposed Action	Alt. 2 Livestock Maximization	Alt. 3 Resource Protection	Alt. 4 Balanced Resource Use	Alt. 5 No Grazing
Total Rangeland Improvements					
- Fences (miles)	0.5	3	0.5	3	90+ (estimated)
- Springs (number)	4	7	0	5	None
- Vegetation Manipulation (acres)	None	2,800	700	1,900	None
Rangeland Improvements BY WSA's					
CA-010-026 Owens Peak	0.5 miles of fence; 1 spring.	0.5 miles of fence, 800 acres of vegetation manipulation.	0.5 miles of fence, 500 acres of vegetation manipulation.	0.5 miles of fence, 1 spring, 700 acres of vegetation manipulation.	30+ miles of fence
CA-010-027 Sacatar Meadows	2 springs. No change in Active Preference AUM's. 1)	3 springs, 1,000 acres of vegetation manipulation. 133 AUM increase in Active Preference.	200 acres of vegetation manipulation. No change in Active Preference AUM's.	2 springs, 600 acres of vegetation manipulation. 70 AUM increase in Active Preference.	20+ miles of fence
CA-010-029 Rock House	2 springs.	2.5 miles of fence, 2 springs, 1,000 acres of vegetation manipulation.	None	2.5 miles of fence, 2 springs, 600 acres of vegetation manipulation.	40+ miles of fence
CA-010-046 Piute Cypress	None	None.	None	None	None

Table 24 (cont.)

Impacts of Rangeland Improvements
on Wilderness Values

- Fences: Construction and maintenance of fencelines under the Standard Operating Procedures and Project Design Guidelines specified in chapter 2 would meet the Interim Management Policy (IMP) requirements for WSA's (see note below). Construction activities would have short term negative impacts on naturalness and solitude. However, after rehabilitation, only slight impacts to naturalness from the actual presence of the fenceline would remain. In addition, by providing for better distribution of cattle and protection of some sensitive areas, the fencelines could have an overall positive affect on naturalness.

- Springs: By again meeting the Standard Operating Procedures and Project Design Criteria, spring developments would meet the IMP requirements. Construction activities would similarly have short term impacts on both naturalness and solitude. However, in the long-term, naturalness and special features would receive positive benefits overall due to protection of the spring site (through off-site cattle watering use) and enhancement of wildlife values.

- Vegetation Manipulation: The vegetation manipulation projects proposed within portions of certain of the WSA's primarily involve prescribed burning. Although the primary purpose of the manipulation is to increase cattle numbers, some benefits to the natural, fire-dependent ecosystem would occur. The manipulation project will have short-term impacts on naturalness, solitude, and primitive recreation opportunities. Some longer term impacts would also result from the use of heavy equipment (eg. for fireline construction).

- Active Preference AUM's: As stated in the footnote 1) below, Active Preference AUM's will change only in the Sacatar Meadows WSA. The increases result primarily from the anticipated results of prescribed burning. Wilderness designation would freeze grazing levels at the preference level existing at the time of designation as grandfathered rights. Increases in active preference levels would, therefore, be prohibited after designation.

NOTE: Until Congress makes a decision regarding the wilderness status of the WSA's, all WSA's will be managed to protect wilderness values in accordance with the Interim Management Policy and Guidelines for Lands Under Wilderness Review (December, 1979).

1) The Scobie Allotment, which falls within the Sacatar Meadows WSA (CA-010-027), is the only allotment which shows a change in Active Preference AUM's through some of the alternatives. The Active Preference in the remaining WSA's will remain the same through all of the alternatives.

Issue 1: IMPACT OF GRAZING ON WILDLIFE

Please refer to Tables 22 and 23 contained in the analysis for Alternative 1 for a discussion related to impacts of this alternative on wildlife.

Issue 2: IMPACT OF GRAZING ON WATER QUALITY AND WATERSHED PROTECTION

WATER RESOURCES

Forage Allocation

I Category Allotments - Allocation of vegetation by residual mulch methods is preferable to allocation by AUM's where annual vegetation production varies significantly. Residual mulch increases infiltration, binds soil particles together and retards erosion. (Hopkins 1954, Singer et.al. 1981) Under this alternative, a minimal amount of mulch is left to help reduce upslope erosion, thus reducing sediment input to streams and helping to abate gully erosion. Unfortunately, mulch management would not allow improvement of other water quality parameters or channel stability since livestock congregate around water sources regardless of how vegetation is allocated. Impacts to water quality and channel stability would increase further during years of high forage production when more grazing can occur before the minimum mulch level is reached.

M and C Category Allotments - Reductions in stocking rates of more than 20% from current levels would improve water quality and channel stability. In like manner, increases in stocking rates of more than 20% would have a negative impact. Smaller reductions or increases would have a negligible impact since livestock congregate near water sources and small changes in numbers would have an indistinguishable effect. As with I Category allotments, impacts on water quality and channel stability would increase when additional grazing occurs during years of high forage production.

Range Improvements

The types of impacts on water resources from range improvements would be similar to those described for Alternative 1. Impacts could be more significant since more and/or larger projects are proposed for this alternative.

SOILS

Similar impacts are expected to occur as discussed in Alternative 1. Vegetation allocation by the residual mulch method is expected to decrease erosion rates in most I Category allotments, as long as protective vegetation cover is present and maintained. Stocking rate reductions on M and C allotments should improve the condition of these allotments. Range improvement impacts would be similar to those discussed in Alternative 1 - only more significant, since more and larger range improvements are proposed. Prescribed burning projects are expected to have the most severe impacts on the soil resources.

Issue 3: ECONOMIC IMPACTS OF GRAZING MANAGEMENT

SOCIO-ECONOMICS

Livestock use would be reduced to 6,258 AUM's plus the forage available from areas under mulch management.

There would be at most a 55 percent reduction in reliable livestock use on I Category allotments. In most years the reduction, if any, would be less because of use authorized under mulch management. Improvements proposed under this alternative would tend to make more forage available in good forage years. However, due to cow-calf operators' need for a reliable year-to-year forage supply, this alternative would probably tend to reduce ranch operator incomes in the short-run. Incomes would be increased in the long-run as vegetation responds to improved management. Maintenance costs to operators of I Category allotments would be increased by the addition of range improvements. This alternative would add the most range improvements and, consequently, the most maintenance costs. The increase in maintenance cost would be about three times as much as under Alternative 1. A part of maintenance costs is repair of damage due to vandalism.

Most M Category allotments would receive increased forage allocations; two would be reduced but only one has a high dependency rating.

C Category allotments would receive reduction in grazing preference but this would not result in reduced actual livestock use because they would be allocated forage equal to their current average actual use. A benefit to the operators would be a reduction in grazing fees paid to BLM; grazing fees are based on the amount of preference even if that is greater than actual use.

Issue 4: IMPACT OF GRAZING ON RECREATION

Hunting and Fishing Opportunities

Hunting experiences would decrease throughout the study area. Fishing experiences would decrease due to the decline in water quality.

Whitewater Rafting Opportunities

Grazing activity would impact whitewater rafting operations on the northern banks of the Lower Kern River. Due to the high level of visitor use, this increase in grazing would have a moderate impact both commercial and non-commercial whitewater rafting.

Swimming and Picnicking Opportunities

An increase in grazing activity would moderately effect swimmers and picnickers along the North Fork Kaweah and Lower Kern Rivers.

Backpacking and Hiking

Portions of the Pacific Crest Trail which cross the study area would experience moderate to high levels of deterioration from increased livestock use.

NON-ISSUE RELATED IMPACTS

VEGETATION

As relates to vegetation manipulation for the alternative, prescribed burning of chaparral would have the same impacts as described in Alternative 1. In addition, removal of pinyon pine by fire or other means, would set secondary plant succession in motion in the pinyon-juniper plant community. Increases in forage for livestock and wildlife could be expected at this stage, with the eventual return of a climax pinyon-juniper plant community over a considerable time period.

Impacts of water developments and fences would be similar to Alternative 1. Since there would be more of these infrastructures, better livestock distribution but more "sore spots" immediately adjacent to water would result.

This alternative woild result in the highest level of utilization allowed for livestock. Combined livestock and wildlife grazing would result in moderate to heavy utilization of desirable competitive forage species such as mountain mahogany, antelope bitterbrush, and desert bitterbrush. Short statured annual plants would result on annual ranges with precipitation over 15 inches in areas with heavy deer use.

R T and E Plants

Kaweah Area (Refer to Map 2a contained in Chapter 2 "Affected Environment".)

Same as Alternative 1.

Isabella Area (Refer to Map 2b contained in Chapter 2, "Affected Environment".)

Same as Alternative 1.

Tehachapi Area (Refer to Map 2c contained in Chapter 2, "Affected Environment.")

Same as Alternative 1.

CULTURAL RESOURCES

The same kinds of impacts to cultural resources sites may occur under Alternative 2 as described for Alternative 1. However, 14 miles of fence are proposed which is greater than Alternative 1, thereby increasing the probability of impacting recorded and, as yet, unknown cultural resources. Six recorded prehistoric sites may be impacted by fence construction, all of which are within the Walker Pass Common allotment (0077); 3 sites appear to meet NRHP eligibility criteria and 3 sites do not appear to meet those criteria. Forty spring developments are proposed, representing a 62 percent increase over Alternative 1; therefore, the chances of impacting cultural resources sites at spring locations is much greater under Alternative 2, particularly in the Juniper-Pinyon Woodland vegetation community. There is

1 recorded site near a proposed spring development; it has been recommend as ineligible for inclusion on the NRHP. Twenty-one guzzlers are proposed over Alternative 1; this represents an increase of 15 guzzlers (150 percent) over Alternative 1, which presents a much greater potential for impacting unrecorded sites. No recorded sites are known to be located where the 5 cattle guards are proposed. Alternative 2 proposes 9,410 acres of vegetation manipulation, representing an increase of 3,800 acres (60 percent) over Alternative 1. A total of 12 recorded cultural resource sites may be affected by vegetation manipulation, 10 more than Alternative 1; 8 of these sites are within the Walker Pass Common allotment (0077). Of the total of 12 sites, 8 sites appear to meet NRHP eligibility criteria, 3 do not appear to meet the criteria, and the remaining site has yet be evaluated.

WILDERNESS

Please refer to Table 24 contained in the analysis for Alternative 1 for a discussion related to impacts of this alternative on wilderness values.

Issue 1: IMPACT OF GRAZING ON WILDLIFE

Please refer to Tables 22 and 23 contained in the analysis for Alternative 1 for a discussion related to impacts of this alternative on wildlife.

Issue 2: IMPACT OF GRAZING ON WATER QUALITY AND WATERSHED PROTECTION

WATER RESOURCES

Forage Allocation

I Category Allotments - This alternative provides 200 additional pounds per acre of residual mulch over the amounts in Alternative 2. This would provide additional protection for the soil surface and help to reduce upslope erosion and sediment input to streams. As with Alternative 2, water quality and channel stability problems would continue although minor improvements would be expected. Differences between Alternatives 2 and 3 would be especially small in years of high forage production when large numbers of livestock would be present and/or longer grazing seasons would occur before the minimum mulch level is reached.

M and C Category Allotments - As with Alternative 2, reduction in stocking rates of more than 20% from current levels would improve water quality and channel stability and increases of more than 20% would have a negative impact. Allocations under this alternative are less than for Alternative 2 but are not less than for Alternative 1 for some allotments. Therefore, existing water quality and channel stability problems may not be solved since stocking rates would have to fall significantly below Alternative 1 levels before improvements would occur.

Range Improvements

The types of impacts on water resources from range improvements would be similar to those described for Alternative 1. The degree of impact would probably be less since fewer improvements are proposed for this alternative.

SOILS

Impacts on soils from this alternative are discussed in the Water Resources section. This alternative is expected to improve the general condition of I Category allotments and M and C Category allotments as discussed in Alternative 2. Range improvements are expected to have fewer impacts since they are fewer in number and acreage impacted. Most range improvement impacts are expected to be localized and short term. Prescribed burning projects are expected to have the most severe impacts on the soil resources.

Issue 3: ECONOMIC IMPACTS OF GRAZING MANAGEMENT

SOCIO-ECONOMICS

Livestock use would be reduced to 4,025 AUM's plus the forage available from mulch management.

There would be at most an 80 percent reduction in reliable forage supply for I Category allotments. The actual forage use reduction would be substantially less in most years because forage would also be allocated from areas under mulch management. The net effect would be an increase in the uncertainty of forage supply, a particularly important factor for those operators who are highly dependent upon these allotments. The cost to these operators from increased maintenance would be less than for Alternatives 1 and 2 because there would be fewer new improvements installed. The increase in maintenance costs would be about one half the amount for Alternative 1.

M and C Category allotments would experience approximately 30 percent less livestock use than they do under present management. In many cases this would have only minor effects on the operators. However, 56 percent of the M Category, and 12 percent of the C Category allotments, have operators who are highly dependent. These operators would probably have noticeable income losses from these forage reductions.

The effect on operator preference and grazing fee payments would be approximately the same as under Alternative 2 for M and C allotments.

Issue 4: IMPACT OF GRAZING ON RECREATION

Hunting and Fishing

Hunting and fishing experiences would remain at present levels.

Whitewater Rafting Opportunities

Impacts would remain the same as in Alternative 1.

Swimming and Picnicking Opportunities

Impacts would remain the same as in Alternative 1.

Backpacking and Hiking Opportunities

Impacts would remain the same as in Alternative 1.

NON-ISSUE RELATED IMPACTS

VEGETATION

As relates to vegetation manipulation for this alternative, prescribed burning in chaparral and pinyon pine removal would have the same impacts as

described in Alternative 2. Less vegetation would be manipulated, therefore there would be less secondary plant succession.

Large amounts of desirable livestock feed and competitive forage species would be left after livestock and wildlife feeding. This would cause an upward trend in perennial species and tall statured annual plants such as wild oats and ripgut brome would dominate on annual ranges where precipitation is 15 inches or more.

Few water developments or fences would be constructed, therefore livestock distribution would not significantly be improved. Vegetation would not be adversely affected due to the reduced amount of grazing. A relatively large amount of forage would go unutilized in this alternative.

R T and E Plants

Kaweah Area (Refer to map 2a contained in Chapter 2, "Affected Environment".)

Same as Alternatives 1 and 2, but there are no conflicts or impacts from range improvements (springs).

Isabella Area (Refer to Map 2b contained in Chapter 2, "Affected Environment".)

Same as Alternatives 1 and 2; much less potential impacts from vegetation manipulation.

Tehachapi Area (Refer to Map 2c contained in Chapter 2, "Affected Environment".)

Same as Alternatives 1 and 2.

CULTURAL RESOURCES

The same kinds of impacts to cultural resources sites may occur under Alternative 3 as described for Alternative 1. One mile of fence is proposed and no spring development is proposed, contrasted with the 25 proposed under Alternative 1; no recorded sites are located in the vicinity of that spring and, although the potential for adverse effects is much less under this alternative, spring areas have a high probability of cultural resource site occurrence. Six guzzlers are proposed, the same number as in Alternative 1; no recorded sites are near those guzzler locations. Five cattle guards are proposed and no recorded cultural resource sites occur at those locations. Alternative 3 proposes 3,140 acres of vegetation manipulation which is 2,470 acres less than Alternative 1, or a decrease of 44 percent. Three recorded cultural resource sites may be affected by the vegetation manipulation: 1 site appears to meet NRHP eligibility criteria, 1 does not, and the remaining site has not yet been evaluated.

WILDERNESS

Please refer to Table 24 contained in the analysis for Alternative 1 for a discussion related to impacts of this alternative on wilderness values.

Issue 1: IMPACT OF GRAZING ON WILDLIFE

Please refer to Tables 22 and 23 contained in the analysis for Alternative 1 for a discussion related to impacts of this alternative on wildlife.

Issue 2: IMPACT OF GRAZING ON WATER QUALITY AND WATERSHED PROTECTION

WATER RESOURCES

Forage Allocation

As the title of this alternative implies, forage allocations are intermediate between Alternatives 2 and 3. Therefore, impacts would be intermediate. Refer to the discussion for Alternatives 2 and 3.

Range Improvements

Impacts on water resources from range improvements would be similar to those described for Alternative 1.

SOILS

Impacts are expected to be between Alternatives 2 and 3. Range improvements will be similarly impacted as described in Alternative 1, 2, and 3.

Issue 3: ECONOMIC IMPACTS OF GRAZING MANAGEMENT

SOCIO-ECONOMICS

Livestock forage consumption would be 5,320 AUM's plus forage available from areas under mulch management.

For I Category allotments there would be a reduction in reliable forage supply of up to 65 percent. The actual reduction in use would be less in most years due to the availability of forage from areas under mulch management. The net effect would be a reduction in the reliability of forage supply, but is would be less severe than under Alternative 3.

The increase in operator maintenance expense would be approximately twice that of Alternative 1.

M and C Category allotments would have reductions in use of about 12 percent. This would not have noticeable effects on rancher incomes in most cases. The effect of operator preference and grazing fee payments would be approximately the same as under Alternative 2 for M and C allotments.

Issue 4: IMPACT OF GRAZING ON RECREATION

Hunting and Fishing Opportunities

Hunting experiences temporarily decrease on I Category allotments and remain at present levels on M and C Category allotments. Some fishing experiences would decrease in quality.

Whitewater Rafting Opportunities

Impacts would remain the same as Alternative 1.

Swimming and Picnicking Opportunities

Impacts would remain the same as Alternative 1.

Backpacking and Hiking Opportunities

Impacts would remain the same as Alternative 1.

NON-ISSUE RELATED IMPACTS

VEGETATION

As relates to vegetation manipulation for this alternative, prescribed burning and pinyon pine removal would have the same impacts as described in Alternative 2. The target amounts of residual mulch left after grazing or allotted AUM's would provide ample amounts of vegetation for wildlife. The plants used by the herbivores, both wild and domestic would benefit because they would be properly - but not overly - utilized. The trend of perennial species would go up, and medium statured annual species such as red brome and soft chess would dominate annual ranges with 15 inches or more precipitation.

As in Alternatives 1 and 2, the construction of rangeland improvements such as water developments and fences would improve livestock distribution. Again, this would benefit plants used as livestock forage species, but there would be "sore spots" immediately adjacent to the water developments.

R T and E Plants

Kaweah Area (Refer to map 2a contained in Chapter 2, "Affected Environment".)

Same as Alternative 1.

Isabella Area (Refer to Map 2b contained in Chapter 2, "Affected Environment".)

Same as Alternatives 1, 2, and 3.

Tehachapi Area (Refer to Map 2c contained in Chapter 2, "Affected Environment".)
Same as Alternative 1.

CULTURAL RESOURCES

The same kinds of impacts to cultural resources sites may occur under Alternative 4 as described for Alternative 1. However, Alternative 4 proposes 14 miles of fences, which is greater than Alternative 1; this greatly increases the probability of impacts to recorded and, as yet, unknown cultural resources. Seven recorded prehistoric sites may be impacted by fence construction, six of which are within the Walker Pass Common allotment (0077). Three (3) sites appear to meet NRHP eligibility criteria, 3 sites do not, and 1 site has not yet been evaluated. Twenty-six spring developments are proposed, which is 1 more than Alternative 1. Since prehistoric cultural resource sites are frequently associated with natural water sources, particularly in the Juniper-Pinyon Woodland, there is a high potential for sites at springs and, thereby, a high potential for adverse impacts from development of springs. There are, however, no recorded cultural resource sites near the proposed spring developments. Thirteen guzzlers are proposed, which is 7 more than Alternative 1, representing an increase of 117 percent; no recorded sites occur at those locations. Under Alternative 4, 5 cattle guards are proposed, 2 more than Alternative 1; no recorded sites occur at those locations. This Alternative proposes the highest number of acres for vegetation manipulation; the 10,640 acres proposed in Alternative 4 are 5,030 acres more than Alternative 1, representing a 90 percent increase. Ten recorded prehistoric cultural resources sites may be affected by vegetation manipulation projects, 6 of which are located in the Walker Pass Common allotment (0077). Of the 10 sites potentially impacted, 7 appear to meet NRHP eligibility criteria, 2 sites do not appear to meet those criteria, and no determination recommendation has been made for the remaining site.

WILDERNESS

Please refer to Table 24 contained in the analysis for Alternative 1 for a discussion related to impacts of this alternative on wilderness values.

Issue 1: IMPACT OF GRAZING ON WILDLIFE

Please refer to Tables 22 and 23 contained in the analysis for Alternative 1 for a discussion related to impacts of this alternative on wildlife.

Issue 2: IMPACTS OF GRAZING ON WATER QUALITY AND WATERSHED PROTECTION

WATER RESOURCES

The adverse impacts on water quality and channel stability caused by grazing and associated range improvements would no longer occur under this alternative. Conditions would gradually improve.

SOILS

Elimination of livestock grazing under this alternative would be the most favorable to the soil resources. Conditions on the majority of the allotments are expected to improve significantly with time.

Issue 3: ECONOMIC IMPACTS OF GRAZING MANAGEMENT

SOCIO-ECONOMICS

All 15 operators of I Category allotments would be substantially affected because they are highly or moderately dependent. Eighty-one percent of the M Category allotment operators, and 35 percent of the C Category allotment operators would be substantially affected also. In many cases cancellation of grazing on the public lands would result in loss of grazing on adjacent private lands which are jointly grazed by the same operator. It would be impractical in many cases for the livestock owners to try to graze the private lands without a fence to exclude stock from the public lands. In other cases public lands may control access to privately-owned parcels. Use of these parcels would be obstructed by closures of the public lands.

Issue 4: IMPACT OF GRAZING ON RECREATION

Hunting and Fishing Opportunities

Hunting experiences would increase if grazing operations were removed from the EIS area. Fishing experiences would improve because of improved water quality.

Whitewater Rafting Opportunities

Cattle activity along the northern bank of the Lower Kern River would be eliminated thereby removing impacts to commercial and non-commercial whitewater operations.

Swimming and Picnicking Opportunities

Individual experiences along the North Fork Kaweah and Lower Kern Rivers would improve if grazing activities were eliminated.

Backpacking and Hiking Opportunities

Maintenance needs of the Pacific Crest Trail would be reduced if cattle activity were removed.

NON-ISSUE RELATED IMPACTS

VEGETATION

Under this alternative no vegetation manipulation would occur. Plant communities would tend towards their climax communities with natural processes being responsible for changes in plant community composition. Wildfires would be considered part of this natural process.

Large increases in forage species for herbivores would occur; more then wildlife could effectively utilize. Mediterranean annual grasses and forbs, having evolved under regimes of at least partial grazing (often heavy), would produce a large amount of mulch. This would lend to a large accumulation of fire fuel, and an increase in fire hazard on the annual ranges.

R T and E Plants

It is assumed that if grazing impacts were eliminated, sensitive species would increase in number and vigor. This is especially true for areas where there exist severe impacts.

CULTURAL RESOURCES

Range improvements under Alternative 5 are limited to the construction of many miles of fences along allotment boundaries for the purpose of excluding livestock from public lands and the removal of existing improvements unless they have other multiple use values, such as water for wildlife. Impacts to cultural resources under this Alternative would be similar to fence-related impacts discussed in Alternative 1. Since the exact locations of fences have not been proposed, no quantified evaluation of impacts to cultural resources can presently be made. However, it may be assumed that more miles of fences would be constructed than for any other alternative, therefore, it may be assumed that more cultural resources sites could be impacted. Since livestock grazing would be eliminated by the end of 1988, grazing-related impacts to cultural resources would be limited to ongoing impacts from wildlife (e.g. minor trampling and burrowing) which would result in a general improvement of site conditions.

WILDERNESS

Please refer to Table 24 contained in the analysis for Alternative 1 for a discussion related to impacts of this alternative on wilderness values.

Table 25

RECOMMENDED MITIGATION MEASURES

The following recommended mitigation measures are intended to help further reduce or eliminate the adverse impacts identified in this chapter and in the summary section, "Unavoidable Adverse Impacts". These include specific measures in addition to those already described under the sections "Standard Operating Procedures" and "Project Design Guidelines" contained in Chapter 2. All mitigation recommendation recommended may not be selected, although all recommended mitigation will be considered for the final program decisions. The recommended measures will be analyzed against the multiple use objectives set forth in the land use plan before accepted. This may involve revision or deletion of the measures presented here.

The District Manager's final program decisions, including accepted mitigation, will be outlined in the South Sierra Foothills Range Program Summary to be released in 1984. Mitigation not selected will be used to identify areas of high monitoring priority.

Adverse Impact	Mitigation	Rationale
1. Overbrowsing of shrubs resulting in inadequate winter forage and thermal cover for deer.	Monitor utilization of key browse species by livestock. Adjust livestock grazing accordingly.	Increased vigor of shrubs will insure deer forage availability.
2. Livestock use at wet meadows and certain streams, limits use of these areas by young deer.	Fence wet meadows and portions of certain streams using cow proof fencing and deer crossing panels.	Will insure the availability of succulent forage and maintain health of young deer.
3. Livestock trampling and vegetation cover removal along streams is a limiting factor on population of the Tehachapi Slender Salamander.	Exclude livestock grazing from known Tehachapi Slender Salamander habitat.	Would sustain viable populations and may induce recovery.
4. Existing wildlife water sources have been denuded of vegetation.	In critical habitat, rehabilitate damaged water sources by fencing, seeding, etc.	Will return productivity of water sources for variety of wildlife species.
5. Continued gullying and collapse of streambanks in allotments; 0045, 0049, 0051, 0074, 0077, 0090, 0118, and 0120.	Structural measures such as check dams, rip-rapping and gabion streambank reinforcements should be installed. Where feasible, temporary fencing should be placed around these structures to protect them from cattle trampling.	Stabilizes existing erosion and prevents further erosion at these sites.

Table 25 (cont.)

Adverse Impact	Mitigation	Rationale
6. Decline in water quality and channel stability of streams from cattle trailing along fence lines.	Where feasible, avoid fencing across streams, if unavoidable, cross at right angle to stream. Fences which parallel streams should be at least 150 ft. from the outside edge of riparian vegetation.	Minimizes impacts of fence lines with regards to streams.
7. Soil exposure from prescribed burning.	Do not burn in large blocks or on slopes exceeding 45%. Leave strips of unburned vegetation as a buffer.	Minimizes erosion from prescribed burning.
8. Recreation sites are being impacted as a result livestock trampling. Allotments: 0090, 0017, 0095, and 0102.	Exclude livestock from specific recreation sites based on the results of monitoring activities.	Preservation of important recreational resource of opportunities and facilities.
9. Vegetation denuded by livestock around water developments.	Where feasible, place salt and protein supplement at least 1,500 feet from the water source.	Would allow revegetation around water developments.
10. Inability of sensitive plant species to reproduce and the loss or gradual change of the habitat caused by grazing (particularly on M and C Category allotments).	a. Monitor the habitats suspected of receiving impacts to: 1. determine exact habitat requirements of the species. 2. document reasonable evidence of livestock as the cause. b. Based on results from above monitoring, adjust the grazing management system to protect the species.	Would assure continued existence of the sensitive species within the defined habitats.
11. Possible impacts to unknown, potentially significant, cultural resource sites from prescribed burning.	Conduct burns under conditions that minimize fire intensity.	Minimizes the thermal impacts to cultural resource sites.

Table 25 (cont.)

Adverse Impact	Mitigation	Rationale
12. Significant cultural resource sites are losing data as a result of uncontrolled livestock trampling, rubbing, and midden contamination.	Exclude livestock from specific cultural resource site locations, based upon the results of the Monitoring Program. Where livestock exclusion is not prudent or feasible, mitigate impacts to significant sites in accordance with Stipulation 6 of the RPMOA and, where applicable, the Memorandum of Understanding among the BLM, Native American Heritage Commission, and the SHPO.	Preservation of important cultural resource sites and site information.

Note: Impacts made reference to in the section "Unavoidable Adverse Impacts" (following page) do not assume implementation of the mitigation measure described in this table.

UNAVOIDABLE ADVERSE IMPACTS

Alternative 1 - Proposed Action

- Continued deterioration of wildlife habitat on several allotments.
- Decline in water quality and channel stability of certain streams and springs.
- Reliable forage supply remains at approximately 8,500 AUM's.
- Minor site specific impacts on recreation resources.
- 5,610 acres of vegetation altered by vegetation manipulation.
- Continued deterioration of certain sensitive species habitat.
- Continued impact to cultural resource sites by livestock trampling, rubbing and midden contamination.

Alternative 2 - Livestock Maximization

- Accelerated deterioration of wildlife habitat on several allotments.
- Accelerated decline in water quality and channel stability of certain streams and springs.
- Reliable forage supply reduced to approximately 6,300 AUM's.
- Moderate site specific impacts on recreation resources.
- 9,410 acres of vegetation altered by vegetation manipulation.
- Accelerated deterioration of certain sensitive species habitat.
- Accelerated impact to cultural resource sites by livestock trampling, rubbing and midden contamination.

Alternative 3 - Resource Protection

- Wildlife population will remain at current levels.
- Reliable forage supply reduced to approximately 4,000 AUM's.
- Continued minor site specific impacts on recreation resources.
- 3,140 acres of vegetation altered by vegetation manipulation.
- Limited, but continued deterioration of certain sensitive species habitat.
- Continued, but fewer number, impacts to cultural resource sites by livestock trampling, rubbing, and midden contamination.

Alternative 4 - Balanced Resource Use

- Wildlife populations will decrease on I allotments and remain constant on M and C allotments.
- Continued decline in water quality and channel stability of certain streams and springs.
- Reliable forage supply reduced to approximately 5,300 AUM's.
- Continued minor site specific impacts on recreation resources.
- 6,560 acres of vegetation altered by vegetation manipulation.
- Limited, but contained deterioration of certain sensitive species habitat.
- Continued impact to cultural resource sites by livestock trampling, rubbing, and midden contamination.

Alternative 5 - No Grazing

- Cancellation of 30 grazing leases and 19 grazing permits.
- Many miles of fence would have to be constructed which in turn could cause additional impacts to cultural resource sites.

RELATIONSHIP BETWEEN SHORT-TERM USES OF MAN'S ENVIRONMENT AND THE MAINTENANCE AND ENHANCEMENT OF LONG-TERM PRODUCTIVITY

Each of the five alternatives involves a different relationship between short-term and long-term uses of the environment. The major differences result from the relative importance of the components of each alternative. The effects of these components are:

Livestock Allocations - Reduced livestock utilization through reduced allocations in the short term may require economic and management adjustments by operators. Long term effects include improved forage production with potential increased allocations for livestock and wildlife.

Vegetation Manipulation and Rangeland Improvements - These activities could cause short-term impacts to wildlife, recreation and watershed quality. Long-term effects include productive chaparral and pinyon pine management, improved animal distribution, increased forage quality and quantity along with associated increased consumption by wildlife and livestock.

IRREVERSIBLE OR IRRETRIEVABLE COMMITMENT OF RESOURCES

Under Alternatives 1, 2, 3, and 4, vegetation manipulation and project construction would involve the following commitments:

- Energy and labor expended for projects would be irretrievable.
- Vegetation manipulation would cause the irretrievable loss of soil associated with the first storms following treatments. The vegetation loss would not be irreversible due to the nature of chaparral and pinyon pine.
- Prescribed burning may cause the loss of some wildlife species associated with decadent vegetation. The individuals lost are irretrievable.

Prehistoric and historic cultural resources are fragile and non-renewable. Any loss, whether inadvertent through natural processes or planned (such as salvage excavation), constitutes an irretrievable commitment of the resource. Breakage, illicit collecting, and disassociation of artifacts through erosion or trampling would constitute a loss in the present archaeological data base which is not retrievable.

CONSULTATION AND COORDINATION

CHAPTER 5 - CONSULTATION AND COORDINATION

PUBLIC AND AGENCY INVOLVEMENT

The public was informed of the preparation of this DEIS by an information/response letter mailed on August 23, 1982, and a Federal Register notice published on August 20, 1982.

The California State Clearinghouse and State Historic Preservation Officer were notified before the development of the draft environmental statement. Much information was obtained through consultations at a working level with the Department of the Interior and other Federal, State and local agencies.

Agencies, Organizations, and Individuals to whom copies of this Document are being sent

FEDERAL

Environmental Protection Agency
Advisory Council on Historic Preservation
U.S. Department of the Interior
- Fish & Wildlife Service
- National Park Service
- Bureau of Reclamation
- Bureau of Mines
- Geological Survey

U.S. Department of Agriculture
- Forest Service
  - Sequoia National Forest
- Soil Conservation Service

U.S. Department of Defense
- Corps of Engineers

CALIFORNIA - STATE AGENCIES

Distribution to the following offices is carried out by the California State Clearinghouse;

Office of the Governor
Office of Planning and Research
State Historic Preservation Office Resource Agency
Resources Agency
- Department of Water Resources
- Air Resources Board
- Division of Mines and Geology
- Division of Oil and Gas
- Native American Heritage Commission
- Department of Fish and Game

Department of Parks and Recreation
Department of Forestry
Water Quality Control Board - Central Valley Region

University of California, Davis
University of California Agricultural Extension Service

CALIFORNIA - LOCAL AGENCIES

County Agencies
County Boards of Supervisors
County Planning Commission
County Agricultural Extension Service
County Farm Bureau
County Department of Public Works
County Department of Libraries

Counties
Kern
Tulare

OTHER ORGANIZATIONS

Natural Resources Defense Council, Inc.
California Cattlemen's Association
California Native Plant Society
Native American Heritage Committee
Sierra Club
National Audubon Society
California Wildlife Federation
Tule River Indian Reservation
Kern Valley Indian Community
California Association of Four Wheel Drive Clubs

INDIVIDUALS

All livestock operators with BLM allotments in the EIS area.

LIST OF PREPARERS

NAME	EIS ASSIGNMENT	POSITION	PROFESSIONAL EXPERIENCE	EDUCATION
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APPENDIXES

APPENDICES

APPENDIX A

Managing for Mulch

The Mediterranean Grasslands of Cismontane California (also called the California Annual Type) present a unique set of management problems. They are among the most productive rangelands in the world, producing up to 5,000 pounds per acre of standing crop. They certainly are the most variable; Hollister Resource Area records show 150 pounds of standing crop on a dry year (1971-72) and 3,000 pounds, on a wet year (1977-78). This is a 20 fold variation.

They also are the most forgiving rangelands in the world: Heady (1965) reports that, "short periods of overgrazing do not permanently damage the soil." Bartolome, et al. (1980), state that recovery of this rangeland from a single year's overgrazing is very rapid. Pitt and Heady (1979) further confirmed the forgiving nature of the annual range. This is not to infer that this range is all forgiving, nor will overgrazing be permitted at any time on public land.

It is impossible or not practical to predict the production of annual range under most circumstances. Murphy (1970) was successful at Hopland where average annual precipitation (35 inches) is higher and spring rain more dependable than on most annual range sites: Duncan and Woodmansee (1975) had little success at San Joaquin Range. This is a much more xeric area than Hopland (17 inches). The latter area, however, is much more typical of most California Annual ranges, including the study area. In addition,it is questionable that Murphy's relatively sophisticated methods would be practical on a large scale.

Therefore, it is futile to assign a hard and fast grazing capacity to a given annual rangeland site. A single year's inventory will only give us the production of that year. One must have at least 10 years inventory data - 20 would be better - to establish a meaningful average and range of production on that site. This is not only completely impractical, but we still would not be able to tell how close to the average or where within the range that the production of the coming grazing season will fall. The inventory is only a benchmark, whether it be taken over a one-year period or a 20-year period. Obviously, we must seek the answer to the question "How much do we graze a given site on a given year?" elsewhere.

A large amount of research recommends managing for a target amount of dry herbaceous matter in pounds per acre or kilograms per hectare to remain at the end of the grazing season. This is referred to as residual mulch. It should be noted that the weight of mulch remaining lessens as the summer progresses into fall. Seeds shatter and the lighter material such as forbs (especially filaree) blow away.

Hopkins (1954) states that mulch prevents high surface temperatures, improves the soil as a habitat for organisms, retards evaporation and increases infiltration. A negative aspect that he noted was that mulch also tends to make the soil warm up slower in the spring.

Singer, et al. (1980), reported that soil loss at the Sierra Foothills Range Field Station was 75 percent greater on plots where mulch had been removed. It stands to reason that the more mulch, the more seeds will be available for graniverous birds and mammals as well as for species regeneration the following year.

It is also obvious that a rangeland that has residual vegetation is much more appealing to the eye than one where everything has been removed by grazing animals.

Bartolome, et al. (1980), found that the amount of mulch left had a very significant effect on annual rangelands which receive an average annual precipitation of more than 15 inches. They found that optimum production of desirable species resulted from rangelands where 750 pounds per acre were left. Mulch levels higher than this resulted in a sharp increase in Medusa Head, perhaps the most undesirable of all grasses. Medusa Head has not been reported on the subject area, but it has proven very adaptable (Sampson, et.al. 1951) and it is not out of the realm of possibility that it could establish. Too much mulch also results in a "thatch which inhibits early response of new growth forage" (Clawson and McDougald, 1982). Bartolome, et al. (1980), found that less than 750 pounds resulted in less production in areas with 15 inches or more precipitation. The amount of mulch left on areas with less than 15 inches of precipitation did not affect the following year's production.

Heady (1956) states that the stature of the plants is inversely proportional to grazing intensity. The least intensity (hence the most residual mulch) will result in grasses such as Medusa Head, Ripgut Brome and Wild Oats. These are coarse, undesirable grasses. Soft Chess and Australian Chess, the two most palatable, nutritious annual grasses usually result when the range has been grazed moderately. Heady goes on to say that as grazing gets more intense, shorter species such as Burr Clover, Filaree and Nitgrass dominate. The first two are highly desirable (especially for sheep), but the third is undesirable for all livestock. Heaviest grazing favors Quaking Grass, Silver Hair Grass, Foxtail, Tarweed (all undesirable) and true clover (Trifolium). Biswell (1956) adds that Turkey Mullein - also called Doveweed because these graniverous birds use it for both feed and cover - takes over on the most heavily utilized range. This is a very undesirable species for livestock. Thus, it can be seen that most levels of grazing may produce both desirable and undesirable species.

Bently and Talbot (1951) reported that there is little difference in calf gains, cattle gains and cattle pregnancies on closely grazed, moderate to closely grazed, moderately grazed, light to moderately grazed or lightly grazed annual ranges. Any differences that did appear were attributed to other factors. The heavier the grazing of course, means more livestock grazed and therefore, more total animal production.

Hopper and Heady (1970) concluded that 500 pounds per acre of residual mulch is optimum from a livestock production standpoint. This conflicts with

Bartolome, et al; (1980), where it is reported that 750 pounds of mulch give optimum quality production. We must remember, however, that the BLM is a multiple use agency and is concerned with other factors besides livestock production.

The Soil Conservation Service maintains that steeper lands needs more mulch to protect it. Whereas this is true, the nature of the soil has a great deal to do with erosion. Clayey and sandy soils generally are less erodible than silty and loamy soils; Singer, et al. (1978), report that "extractable (free) iron is an important factor in (soil) aggregate stability." Free iron in soil manifests itself by forming bright red iron oxide, which thereby colors the soil red. These red soils are less erodible than other soils. Exchangeable sodium tends to disperse soils, but they are seldom present on slopes in the subject region.

Thus, it seems like we have two "magic" figures: 500 pounds per acre of mulch for the most economic return and 750 pounds per acre for maximum quality production. To utilize either of these two figures in all cases is a gross over-simplification. Slope, gradient, length of slope, rainfall intensity, runoff, precipitation and soil properties must all be taken into account.

Therefore, a chart has been prepared to act as a guide to the target amount of mulch that should be left. This chart is in general agreement with figures developed by Clawson and McDougald (1982).

An attempt was made to keep the mulch requirement between 500 and 750 pounds per acre because of the research findings mentioned above. This rule was not adhered to, however, at the lower end of the precipitation scale and the upper end of the slope scale.

Minimum amounts of mulch are required when the yearly average precipitation is 15 inches or less. It will be recalled that Bartolome, et al. (1980), found that there will be little to be gained from a production standpoint if more mulch is left. Thus, the mulch is strictly for watershed protection, wildlife and aesthetics. Indeed, areas with less than a yearly average of eight inches of precipitation may not even produce the required amount of mulch; these must be considered areas of limited grazing suitability and grazed only on years of abnormally high precipitation when there will be standing crop produced that is over and above the mulch requirement.

Soil is taken into consideration when the yearly precipitation is 16 inches or more. Red soils, clayey and sandy soils are more resistant to erosion. Thus, they often have a relatively lower mulch requirement than silty or loamy soils under the same conditions of precipitation and slope.

Mulch requirements on very steep slopes with high precipitation rates are higher than 750 pounds per acre. This of course, is managing for Medusa Head on clayey soils. This noxious grass, however, is deemed a far less evil than erosion and the resultant on-site and off-site damages.

It must be recognized that this chart is only a guide. Specific allotments have specific requirements such as erosion conditions and critical wildlife habitat that must be considered on a case-by-case basis. It must be remembered that rangeland management is both an art and a science and nothing can replace professional judgement and experience.

The chart for residual mulch requirements is displayed below.

Average Annual Precipitation In Inches		Percent Slope			
		0-25	26-50	51-75	76-100
Less than 8 inches	all soils	200 lbs/acre	300 lbs/acre	400 lbs/acre	500 lbs/acre
8 to 15 inches	all soils	300 lbs/acre	400 lbs/acre	500 lbs/acre	600 lbs/acre
16+ inches	red soils, clayey and sandy soils	500 lbs/acre	600 lbs/acre	750 lbs/acre	750 lbs/acre
16+ inches	loamy and silty soils	500 lbs/acre	750 lbs/acre	900 lbs/acre	1000 lbs/acre

Managing for mulch provides a highly flexible management tool to the land manager. He or she can adjust the desired (target) amount of mulch to the conditions. Also, since the production of the annual range is so variable from year to year, the manager can adjust the grazing to leave the target amount of mulch. For example, the target amount of mulch for a given site is 300 pounds per acre. One thousand pounds are produced on a wet year. Thus, 700 pounds of mulch can be removed by the livestock on this year. Conversely, only 350 pounds may be produced on a dry year. Therefore, only 50 pounds may be taken on a dry year.

"The government agency" (e.g., the Bureau of Land Management) has been criticized because grazing periods and stocking rates are based on the average time of range readiness and forage production, rather than forage availability and nutritive value during individual years (Holechek, 1981). Holechek goes on to say, this often results in poor efficiency in the use of the forage resource." Managing for mulch will do a considerable amount to rectify this problem.

The idea of managing for mulch may be new to some people, but actually it is probably as old as animal husbandry itself. Many livestock operators on winter and spring annual ranges always left what they termed "carryover", unutilized forage (also called standing crop) when they removed their livestock from the range in the late spring. This carryover was to sustain the livestock when they were returned to the range in the later fall until new growth appeared in late winter. Carryover is synonymous to residual mulch. Therefore, mulch management is an old concept. Clawson and McDougald (1982) report that "it is a common practice to leave ample residual dry matter as dry feed source to mix with high moisture new growth, thus insuring adequate levels of dry herbage at the start of the growing season."

Livestock turnon and turnoff dates would be adjusted to accommodate when feed was ready to be grazed and when livestock would have to be removed from the range because the target amount of residual mulch had been reached. This calls for a considerable amount of flexibility in the rancher's operation. Since, however, many livestock operators have been inadvertently managing for mulch for a long time, it should not prove to be an insurmountable problem for ranchers to adjust their operations to mulch management.

GLOSSARY

GLOSSARY

ACTIVE PREFERENCE: The maximum level to which a grazing operator is allowed to make use. Represents the estimated carrying capacity of the range.

ACTIVE USE: That part of a livestock operator's preference which he or she actually uses during a given grazing season.

ALLOTMENT: An area of public land where one or more operators graze their livestock. It may include parcels of private or state land. The number of livestock and period of use are stipulated. An allotment may contain one or more pastures.

ALLOTMENT MANAGEMENT PLAN: Allotment specific grazing management plan specifying livestock numbers, season of use, grazing system, and needed rangeland improvements.

ANIMAL UNIT MONTH (AUM): The amount of feed or forage required by one mature cow and her calf under six months of age or their equivelant for one month. This is from 800 to 1,000 pounds of dry forage.

ANNUAL: A plant that starts from seed and completes its life cycle in one year.

BROWSE: The tender young shoots, twigs, and leaves of trees and shrubs that are eaten by herbivores; to feed on shrubs.

CARRYING CAPACITY: Maximum stocking rate possible without damaging vegetation or related resources.

CHANNEL STABILITY A term used to describe the conditions of stream and spring channels; includes existing erosion and susceptability to future erosion processes.

CISMONTANE: The western side of the main Sierran crest, as opposed to the deserts.

CLIMAX: The highest ecological development of a plant community capable of perpetuation under the prevailing climatic and soil conditions. The final stage of plant succession.

CLOSED CANOPY: A forest or woodland where the tops of the trees touch each other, largely obliterating the sky.

COMPETITIVE FORAGE: Forage that is utilized by more then one grazing animal at the same period or in the same area(s).

DIURNAL: Daily, recurring every day, relating to the daytime.

ENDANGERED (SPECIES): A formal designation used by the U.S. Fish and Wildlife Service (USFWS) and the California Department of Fish and Game (CDFG) when a species prospects of survival and reproduction are in immediate jeopardy from one or more sources.

FORB: A broadleafed herbaceous plant.

GRAZING SYSTEM: Prescribed systematic sequence of grazing use and non-use of an allotment.

GUZZLER: A surfaced area (wax, asphalt, etc.) to collect water runoff for storage.

HABITAT: Description of where the species lives, ie; a description of the environmental association where it would most likely be found.

HEADCUTTING: Gully erosion where the gully begins to form at a given place in the streambed and then progresses upstream.

HERBACEOUS PLANT: Any plant that does not develop woody parts.

INSOLATION: Received solar radiation, as by the earth.

KEY SPECIES: (Key Management Species) A major forage species on which management should be based.

LISTED (SPECIES): Any plant or animal species listed by the USFWS as Threatened or Endangered published in the Federal Register; also includes species formally listed by CDFG as rare or endangered.

MEDITERRANEAN ANNUAL: Annual vegetation that is suited to regions of cool, moist winters and hot, dry summers. Some perennial herbaceous vegetation is sometimes present in the Mediterranean Annual type.

MULCH: The herbaceous vegetation left after grazing.

OVER OBLIGATED: A range that has too many grazing animals alloted to it; vegetation production is not enough to sustain these animals without overgrazing.

PERENNIAL: A plant that lives for three years or more.

PLANT COMMUNITY: A natural association of plants that repeats itself when soil, climatic, and other ecological factors are similar.

PLANT SUBCOMMUNITY: A natural subdivision of a plant community. Plant subcommunities are named after their dominant vegetation species and repeat themselves where ecological factors are the same.

PLANT SUCCESSION: The process of vegetational development whereby an area becomes successively occupied by different plant associations of higher ecological order.

POTENTIALLY SUITABLE: A tract of land that is not suitable for grazing but can be made so; e.g.: thick chaparral that can be made grazable by prescribed burning.

PREFERENCE: (Grazing Preference) The total number of animal unit months of livestock grazing on public lands apportioned and attached to base property owned or controlled by a permittee or lessee. It is the sum of the active preference and suspended preference.

PUBLIC LAND (p.l.): Land owned by the people of United States and administered by the Bureau of Land Management.

RANGE CONDITION: The present state of the vegetation of a rangeland site in relation to the climax (natural potential) plant subcommunity of that site. Measured as a percentage of the present plant subcommunity that is climax for that site.

RANGELAND IMPROVEMENT: Any structure, excavation, or vegetation manipulation that facilitates the management of livestock.

RARE (SPECIES): A formal classification used by CDFG when a species, although not presently threatened with extinction, is in such small numbers throughout its range that it may become endangered if its environment worsens.

ROUNDS OUT: Completes, leaves no omission. This term is used where public land is an inholding surrounded by a livestock operator's deeded or leased private land, or where the private land is adjacent to the public land on two or three sides.

R.T.E.: Rare, threatened or endangered plant or animal species. (CA Dept. of Fish & Game designated and/or USFWS candidate proposed or listed; see also Sensitive Species.)

SEASON LONG: Throughout the entire grazing season. Often a season long grazing authorization is for the entire year on annual range. This is because of the variation in precipitation patterns; forage may become available as early as October or as late as January.

SEASON OF USE: That period of time, as designated by planning documents, within which livestock grazing can be authorized.

SECONDARY PLANT SUCCESSION: Occurs where some serious disturbance such as fire has drastically altered a plant community. Plant succession starts over again or at a lower ecological order th3n before the disturbance.

SENSITIVE (SPECIES): An internal BLM list of species that need special management consideration in order to avoid formal federal listing. By definition, sensitive species include species identified as candidates or proposed for federal listing and other species designated by the BLM State Director.

SOIL SURFACE FACTOR (SSF): A subjectively derived figure which reflects the present erosion activity on the ground surface.

SURVEY: (Range Survey): A vegetation inventory where plant species and their ground cover are noted so that herbivore carrying capacities can be estimated.

STANDING CROP: The total amount of herbaceous forage produced on a given site, often used to refer to annual ranges.

TEMPORARY NONRENEWABLE: A permit that enables a livestock operator to graze more than their active preference allows. This enables the grazing operator to take advantage of extra forage produced on favorable forage year.

THREATENED (SPECIES): A formal designation, under the Endangered Species Act, used by USFWS when a species is likely to become an endangered species within the foreseeable future throughout all or a significant portion of its range.

TREND: The direction of change in range condition.

TRANSMONTANE: The eastern side of the Sierran Crest; e.g. the desert, sagebrush scrub, and the pinyon-juniper.

TRANSPIRATION RATE: The rate at which plants utilize water and release moisture from their surfaces.

UNDER OBLIGATED: A range that has too few herbivores to properly utilize the vegetation production.

UNGULATE: A hoofed mammal, almost exclusively herbivorous.

VEGETATION MANIPULATION: Changing the vegetation on a given site, often but not exclusively so that site will produce more forage for herbivores. This can be done by fire, mechanically, chemically, or any combination of the three.

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